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CLINICAL NOTES ON LICHEN PLANUS.

Read in the Section of Dermatology and Syphilography, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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Although lichen planus is one of the more rare diseases of the skin, it is one which occurs frequently enough to warrant the general practitioner being well acquainted with its natural history and therapeutics, while the very considerable suffering sometimes caused by the eruption, and its occasional rebelliousness to remedies, demand a further study from the specialist in regard to its nature and treatment. It is with a view of aiding in both these directions, that I have ventured to bring before this Association the experience which I have had with the disease during the past twenty years.

Erasmus Wilson[1] was the first to call attention to lichen planus, over twenty years ago, and his description of the eruption was so clear and graphic that it was at once recognized, especially in this country and England, and has long found a place in most dermatological classifications; and repeated reports on its clinical features have established them so clearly that, in this country at least, it is now one of the best known eruptions of the skin in dermatological practice. As the description given by Mr. Wilson, in one of his earlier papers, is very lucid and complete, I may be excused for quoting it somewhat at length:[2]

"Lichen planus is an eruption of pimples remarkable for their color, their figure, their structure, their habits of isolated and aggregated development, their habitat, their local and chronic character, and for the melasmic stains which they leave behind when they disappear.

"The color of the pimples is of a dull crimson-red, more or less livid, and suffused with a purplish or lilac tinge. It is most characteristic in the recently developed and discrete papules, and in the aggregated form is apt to assume the duskier hue of ordinary chronic affections of the skin. The striking color of the papules contrasts very strongly with the unaltered complexion of the skin on which they are developed. Indeed, it is generally the color and appearance of the pimples, without other symptom, that first attracts the attention of the patient to the disorder, and urges him to seek for relief.

"In figure the papules are flattened, smooth, and depressed on the summit, angular in outline, only slightly elevated, and of a size ranging between 1 and 3 lines in diameter. And this peculiarity of figure is so striking that we have selected it as the pathognomonic characteristic of the eruption. The redness may be the first sign to strike the eye, but redness is a phenomenon common to many eruptions of the skin; although, as we have just said, the redness of lichen planus is peculiar, whereas the flatness of the summit of the papules is altogether different from anything that is met with in other affections of the skin; and the flatness is rendered more conspicuous by the summit of the papule being occupied by a thin, horny, semi-transparent lamina of cuticle, depressed on the surface, and marked in the centre by the aperture of a follicle, which represents a sort of *hilum*. It is to this peculiarity of figure that the word *planus* is especially applicable, and this has guided our use of the term."

Lichen planus is rather an easy eruption to diagnosticate if these peculiarities are borne well in mind, for, as far as I have observed the disease, there are always primary lesions to be discovered somewhere, generally at the edge of the eruption, however old or altered it may be in character; and these primary lesions will always present the flat summit, with the depression in the centre.

In some instances, placques of considerable size are formed by the aggregated papules of lichen planus, and especially on the lower legs these patches will, at first sight, be not at all suggestive of the eruption in question, but will resemble a dry, hard patch of eczema, of a purplish brown color, with adherent epidermal covering. But on closer inspection, the edges of

[1] Wilson, Diseases of the Skin, sixth edition, London, 1867, p. 190.

[2] Wilson, Journal of Cutaneous Medicine, Vol. iii, London, 1869, p. 117.

the patches are seen to be very sharply defined, and abruptly raised, quite differently from anything seen in the latter eruption, and every lesion will be found to have the flat summit characteristic of the disease. The form of the lesions has been likened to an inverted flower pot, only not proportionately so high, with the steep edges, and the hole in the centre, making the *delle* or depression seen in the papule of lichen planus.

The location of the eruption, or its seat of predilection, is also rather peculiar or characteristic. It is pretty constantly met with about the wrist, either on the flexor or extensor surface, and a few or many papules develop on the back of the hands. The next most frequent locality is on the lower legs, especially on the anterior aspect, and commonly it comes on the body only after there has been a considerable development on the extremities. In rare cases it attacks also the palms and soles, and still more rarely the face; it has also been observed by Wilson and others on the tongue, and in one of my cases which was very severe and general, the tongue and buccal cavity were badly affected, giving rise to great suffering. Some years ago,[3] the present writer reported two cases of lichen planus where the eruption developed on the glans penis some weeks before appearing elsewhere, when it attacked the usual parts and presented characteristic appearances.

There is still another rather remarkable characteristic of the eruption of lichen planus, which is, that the papules or patches generally leave behind them a pigmentation much greater than would be ordinarily expected from such lesions; and this staining is measurably proportionate to the duration of the eruption or of the individual portions of it. In some instances the discoloration will be of a deep brown, and may persist weeks or months. In other instances it may be very light, and quite transient, but it is always a recognizable feature.

Much difference exists, in different cases, in regard to the subjective symptoms in lichen planus. In some cases, mild in character, there will be very little itching, and the eruption will give little inconvenience except from its appearance, while in certain cases the burning and itching attending the eruption are so severe that the sleep is greatly broken, and the suffering occasioned is excessive. Between these there may be all degrees of inconvenience, but in the main the disease is not characterized by much itching; the single papules appear from time to time, often unnoticed until seen.

Lichen planus, as before remarked, is one of the rarer diseases of the skin, and in statistics from a large number of cases, stands far down the list in regard to its relative frequency. In my experience, among something over 10,000 cases of skin disease in my clinics at the New York Hospital, and the Skin and Cancer Hospital, there occurred forty-five cases of lichen planus, giving a percentage of .45. Among something over 7,000 skin cases in private practice, of which I have record, there have occurred forty-six cases of lichen planus, giving a percentage of a trifle over .65. The slightly larger relative proportion in private practice is probably accounted for largely by greater attention which would be paid to such an eruption among the wealthier classes, where the disfigurement would call for relief, even if the itching were not troublesome. The combined statistics from these two classes of patients give a total of ninety-one cases of lichen planus among some 17,000 cases, or over 53 per cent. The following table I shows the ages and sex of the cases:

TABLE I.—AGES OF PATIENTS WITH LICHEN PLANUS.

AGE.	Private Practice.		Public Practice.		Grand Totals.
	Males.	Females.	Males.	Females.	
3 years	. . .	. . .	1	. . .	1
15 to 20 years . .	. . .	. . .	1	. . .	1
20 to 25 years . .	1	2	5	3	11
25 to 30 years . .	4	. . .	1	2	7
30 to 35 years . .	1	1	1	3	6
35 to 40 years . .	5	3	2	3	13
40 to 45 years . .	3	3	1	5	12
45 to 50 years . .	4	5	5	1	15
50 to 55 years . .	3	5	4	5	17
55 to 60 years . .	2	2	. . .	1	5
60 to 65 years . .	. . .	. . .	. . .	. . .	. . .
66 years of age .	1	1	. . .	1	3
	24	22	21	24	91

The eruption affects males and females in almost the same proportion, there being forty-five males to forty-six females. It will be further seen from this table, that the eruption is one of adult, or rather middle life, fifty-seven of the cases, or 62 per cent., coming between the ages of 35 and 55 years. There were but two patients under 20 years of age, both males, in public practice, and few after 55 years of age. Curiously enough, there were three patients with the eruption who were just 66 years of age. It is a little peculiar that all but two of the twenty-two females seen in private practice were married, and seven out of the ten females seen at the New York Hospital were also married. I have not the data in regard to the fourteen females at the Skin and Cancer Hospital, nor can I learn the marital relations of the male patients. I can hardly believe that this can have any influence in the disease, but it may be a clinical fact worth noting. The two unmarried females were aged 23 and 56 respectively.

Lichen planus has, as far as I know, no tendency whatever to spontaneous recovery. The following table II gives the duration of the disease, before coming under my observation, in forty-eight cases of lichen planus in private and

[3] Bulkley, Archives of Dermatology, New York, Vol. vii, 1881, pp. 135, 392.

public practice. Many of the cases had been under other treatment; some had been entirely neglected.

TABLE II.—Duration of Lichen Planus in 48 Cases at the Time of Applying for Treatment.

Duration.	Male.	Female.	Total.
Three months and under	9	10	19
3 months to 6 months	3	5	8
6 months to 1 year	7	3	10
2 year to 2 years	1	2	3
1 years to 3 years	...	1	1
2 years to 4 years	1	...	1
4 years to 5 years	...	...	...
5 years to 10 years	1	2	3
10 years to 15 years	...	...	...
15 years to 20 years	1	...	1
Unknown	1	1	2
Total	24	24	48

Here we see that while in a considerable number of them, the disease had lasted but a few months, there were some of the patients who had had the eruption a year or more, while in three instances it had remained between five and ten years.

Lichen planus is also rebellious to treatment, as is shown by table III, which exhibits the length of time during which forty-six patients with the eruption were under observation and treatment.

TABLE III.—Duration of Observation of 46 Patients with Lichen Planus.

Duration.	Male.	Female.	Total.
Three months and under	7	6	13
3 months to 6 months	7	3	10
6 months to 1 year	...	3	3
1 year to 2 years	2	...	2
2 years to 3 years	1	2	3
3 years to 4 years	1	1	2
4 years to 5 years	...	1	1
Seen once only	5	7	12
Total	23	23	46

The *prognosis* of lichen planus, therefore, although good as to an ultimate cure, if proper treatment is faithfully carried out, should always be a guarded one in regard to the duration of the eruption, for under the very best of treatment the eruption may persist for weeks, or even months, and even under the best circumstances, seldom disappears very rapidly.

The *diagnosis* of ordinary cases of lichen planus should not be very difficult, if due regard be paid to the peculiar and almost pathognomonic features of the eruption which have been already mentioned; and, as before remarked, some of the primary lesions, quite characteristic in appearance, can usually be discovered in every case, if sufficient diligence be exercised.

The only eruptions which should ever be mistaken for lichen planus are, a newly developing psoriasis punctata, a papular eczema, a lichen simplex, scabies, a papular syphilide, and erythema papulatum.

Some time ago, Mr. Jonathan Hutchinson[4] described this eruption under the name of lichen-psoriasis, and the mistake of confounding lichen planus with psoriasis is the more justifiable, because, as he has pointed out, the lesions of the latter, when they are just developing, present minute punctate spots, with a shiny summit, like those of lichen planus; and only this morning I saw a new case of the eruption under consideration, which had just been diagnosticated as psoriasis punctata by the family physician. As this case is one of very considerable interest, and as it makes the fifth case in which the eruption has developed largely on the glans penis, I may be excused for mentioning it somewhat in full.

Mr. H., aged 28, a strong, well developed and healthy man, with dark complexion and weighing 150 lbs., has never had any eruption before; nor, indeed, suffered from any illness. He never touches spirits or beer, but smokes ten to fifteen cigars daily. Three or four months ago, without any apparent cause, some papules developed on the right arm, on the anterior aspect, just below the bend of the elbow. The number increased every day, and one week later some similar papules appeared on the left forearm in the same situation; their number then increased in both localities up to about a month ago, the new ones coming both on the upper arms and down towards the wrists, and more lately a few small spots have appeared on the backs of the hands. About a month after the first appearance on the arms, similar points developed at the root of the neck, and soon formed several groups, extending along toward the shoulders. All of these papules have remained from the first, and at about the same size, seldom increasing to more than 2 or 3 millimetres in diameter, and not changing at all after they have become fully developed.

About a month after the first appearance of the eruption on the forearms, some points developed upon the glans penis, which increased in number and coalesced, forming patches 5 to 8 centimetres in diameter, of irregular shape, covering half the glans, and also many on the foreskin; these also have remained in much the same condition for the past month. There was little itching with the development of the eruption, but now he experiences considerable discomfort therefrom, especially at night, and particularly on the penis.

The cutaneous condition may be thus briefly described: On the anterior aspect of the upper arms, and the radial side of the forearms, there is an eruption, more pronounced about the bend of the elbow, composed entirely of flat, pinkish-red papules, many of them touching one another, but in no place making anything of a patch. The papules are of quite uniform size, but some of them a little irregular or star-shaped, and with a glazed summit, but nowhere surmounted by a

[4] Hutchinson, Clinical Lectures on Rare Diseases of the Skin.

perfect scale. Some of them show marks of scratching, and have a more inflamed, red surface, covered with dried exudate. On the flexor surfaces of the left forearm are two very marked papules of large size, sharply defined, and more red than the others; these have been there almost from the first. On the backs of the hands there are a few scattered, red papules, similar in character to those seen elsewhere, most of which are dellated or slightly depressed in the centre.

On the glans penis the eruption, which covers half of its surface, is composed of slightly raised, purplish patches of various sizes and shapes, hard and slightly scaly on the surface, and giving a rather leathery sensation when handled. The prepuce, extending to nearly an inch when retracted, is about half covered with irregular papules and streaks, of a brownish purple, made up of similar papules, also somewhat scaly on the surface; as before stated, the eruption on the organ has remained about the same for a month. There is as yet no eruption on the legs, nor elsewhere than mentioned.

In a guttate psoriasis, which might affect almost the same extent of surface on the forearms, we would have the newly formed papules covered with a more silvery, easily detached scale; the color also would be more livid, and they would not be so decidedly flat and depressed in the centre. Moreover, in this particular case, the diagnosis from psoriasis could be made with certainty by the clinical history, for no psoriasis could remain, as this had, during three months in the same condition; for we know that the papules of psoriasis, which begin very small, invariably enlarge quite rapidly, and in this time would have presented, somewhere, typical lesions of the disease.

Lichen planus is sometimes rather difficult to differentiate from papular eczema and ordinary lichen simplex. But in both of these the papules are more acutely inflammatory, are always accuminated, and never flatten down so as to present the appearances described as characteristic of lichen planus; moreover, these eruptions are more violently itchy from the first, than is that under consideration.

The scattered papules of scabies, sometimes seen on the forearms and about the elbows and abdomen, may suggest lichen planus, but they resemble those of eczema more in character, and the diagnostic marks of scabies elsewhere should establish the diagnosis.

A newly developing papular syphilide sometimes resembles the eruption of lichen planus; but the eruption is more general from the first, while, as we have seen, lichen planus comes out slowly, it being commonly localized in one place for some time before appearing elsewhere. Moreover, the papules of the syphilitic eruption are never so flat and shiny as those of lichen planus, nor have they the central indentation, and the scale which soon forms on their summit is very characteristic, being of a yellowish brown, attached in the centre, with the edges tending to become loosened. The general and other signs of syphilis will also commonly serve to prevent this mistake.

Erythema papulatum, coming as it very frequently does, about the extensor, and also flexor, surfaces of the wrists, does sometimes suggest lichen planus very strongly. But the papules of this eruption are much larger, as a rule, more elevated and rounded on the summit, and have not the peculiar purplish-pink lustre which can generally be found on the papules of lichen planus. Moreover, the lesions of erythema papulatum commonly come out very quickly, present much more inflammatory character, and subside much more quickly than do those of lichen planus.

For some years past there has been more or less discussion among dermatologists, in this country and abroad, respecting the relation between, or rather the identity of, the *lichen planus* as here described, and as we know it here and in England, and the lichen ruber, as it was so graphically described by the elder Hebra, in Vienna, twenty or more years ago. The subject is an important one, both as affecting prognosis and treatment, but it is also an intricate and difficult subject to discuss, and one which cannot, with profit, be entered upon on the present occasion. It was very thoroughly discussed, both from its clinical and histological aspects, by Dr. A. R. Robinson,[5] of New York, some time ago, and as his views coincide wholly with my own, I cannot do better than to give you his brief but convincing conclusions, as follows:

"From a comparison of the symptoms, histology, prognosis, and treatment of the two forms of eruption, we find that as regards the symptoms: in lichen ruber the papules generally commence on the trunk, and tend to extend over the entire body, and in lichen planus they generally commence on the forearms and legs, and very rarely spread over a large area. In lichen ruber the papules are round, accuminated, covered with thin scales, and only show a depressed centre when situated around a hair follicle or undergoing a retrograde process; in lichen planus the papules are mostly angular in outline, generally umbilicated, and never scaly at the commencement. In lichen ruber the eruption is not symmetrical, and the papules do not increase by growth at the periphery; in lichen planus the eruption is generally symmetrical, and many of the papules increase in size to a certain extent by spreading peripherally. Lichen ruber, if not treated, tends to marasmus and death; lichen planus has no special effect upon the general condition of the system.

[5] Robinson, Lichen Ruber and Lichen Planus. G. P. Putnam's Sons, New York. 1883.

"From microscopical observation we find that lichen ruber is an atypical keratosis, and lichen planus an inflammatory affection of the papillæ of the upper portion of the corium, with subsequent changes in the epidermis. In lichen ruber the corneous layer is hypertrophied, the rete also slightly thickened, whilst there are few or no changes in the cutis; in lichen planus the corneous layer is often absent, the rete is thickened, and there is a dense round-cell collection in the papillæ and upper part of the corium. Lichen ruber is, therefore, an anomaly of growth of the corneous layer, and lichen planus an inflammatory affection of the vascular portion of the skin." He also argues, very conclusively, that the two eruptions are also not two forms of the same disease, nor are they different stages of the same eruption, and I may say that, being more or less conversant with lichen planus in Vienna, and also with certain rare cases which have occasionally been met with in this country, I am myself most thoroughly of the opinion that lichen ruber and lichen planus are radically two entirely distinct diseases.

I had hoped to be able to give details of some very interesting and severe cases of this disease which have been under my care, but this paper has already exceeded the limits I had proposed to read, and will defer their presentation, but will make a few comments on the general features of the disease, as they have presented themselves, especially in private practice.

I have been constantly impressed with the observation of the far greater severity, and also obstinacy, of the eruption, in women than in men. In looking over my notes of the eruption in the latter, I find very few instances where the eruption was very general, and hardly any one where it caused what could be called any very great distress. But among the female cases I find a dozen cases in whom the eruption became very general, and in nine or ten of these, the suffering from the disease was very great indeed. In one of them the eruption had lasted two years before she came under my care, and another lady had suffered fifteen months. In several of these cases it was necessary to make use of internal quieting remedies in order to get any rest at night. I have also been struck by the fact that, in most of the cases in females, in private practice, certainly those who have had the eruption at all severely, the sufferers had been accustomed to the very great use or abuse of water on the skin, in the way of cold daily general ablutions, so that of late I have inquired into the fact, and seldom fail to find this to be the case. As this is a more common custom among females than males, in this country at least, I have been led to believe that it is an element of causation to be taken into account; and in a number of the cases occurring in males I have found the same habit to prevail.

Occasionally, even a quite severe eruption will disappear very shortly under but very moderate treatment, and in one instance a very general eruption, on a lady aged 52, vanished very shortly after her single visit, and apparently without the aid of treatment; but this is a great exception. In one instance an eruption in a gentleman, which had resisted pretty faithful treatment, disappeared under the employment of the cuticura remedies after he had ceased attendance; but, on the other hand, I find notes of other cases where these remedies had been tried in vain before coming under my care.

In regard to the *treatment*, inasmuch as we know very little as to the real causation of the disease, it is very difficult to give an intelligent explanation as to the lines to be pursued. The patients generally appear to be in good general health, and there is very little to take hold of in the way of rectification of supposed errors. We know, however, that the eruption is of a congestive and inflammatory nature, and it appears to be due to a suboxidation process closely akin to that found in eczema and other inflammatory diseases of the skin; and practically this line of treatment is that which is found to yield the best results—indeed, when faithfully carried out, this is commonly very satisfactory.

The alkalies, given with a free hand, will not only serve to mitigate the suffering of the patient, but arrest the further development of the eruption; and of these, acetate of potassa, with nux vomica and a bitter infusion, after meals, have served me about the best. Constipation must, of course, be carefully avoided.

An empiric sort of a prescription was suggested by the elder Bœck, of Norway, when in this country some years ago, and was strongly recommended by Taylor,[6] in his clear and practical article on the disease some time since; and this has also done me most excellent service in many cases. It consists in the administration of from 10 to 20 grs. of chlorate of potassa, dissolved in considerable water, directly after each meal, followed in half an hour by 20 drops of dilute nitric acid, also well diluted. It was supposed to act as an oxidizing agent, promoting the assimilation of food, and the disintegration of effete substances.

After a cooling course with one of the above, a more tonic course is often required, and then nothing is better than the sulphate of iron, with sulphate of magnesia and sulphuric acid, in what is known in the dermatological world as Startin's mixture. Arsenic, in my hands, has been of very little use in this eruption; indeed, in the more acute stages, seems to aggravate the eruption.

In regard to diet, very little can be said, for we know so little of the causes underlying the eruption. But as it is an inflammatory affection, and associated more or less with a deficient oxi-

[6] Taylor: Archives of Dermatology, Vol. I, No. 1, 1875.

dation process, the diet should be simple and nutritious, avoiding entirely stimulants and all food of difficult digestion, and also articles liable to undergo acid fermentation. Excess of sweets certainly has seemed to aggravate the eruption in my experience.

Locally, considerable can be done by properly directed measures, both in the way of relieving the general suffering and checking the disease.

In acute cases, the well-known calamine and zinc lotion, with an extra proportion of carbolic acid, certainly gives great relief, and seems to check the development of the eruption.

Ichthyol, in a 2 to 4 per cent. watery solution, kept freely applied, is also grateful and beneficial. When the skin becomes at all dry, a 1 or 2 per cent. carbolized vaseline, freely applied, is the best application.

In more chronic conditions, or when the eruption remains quite localized, the treatment suggested by Unna will sometimes seem to produce a remarkable result. This is a diachylon ointment containing even as high as 4 per cent. of carbolic acid, with bichloride of mercury added in slowly increasing quantity, beginning with 2 grs. to the ounce I have, in rare cases, seen the amount of the corrosive chloride increased gradually, until the patient bore well even 10 or 15 grs to the ounce. This is of course a great exception, and this plan of treatment should be used with caution, although, when intelligently carried out, it certainly removes the chronic, obstinate lesions, more certainly than almost any other.

Alkaline baths are often of much service in this eruption, and may be taken two or three times weekly, followed by the calamine and zinc lotion, or the carbolized vaseline. On the other hand, as already mentioned, it has strongly impressed me, especially in regard to my cases in private practice, that too great bathing of the skin, especially cold bathing, has been often one of the chief features of causation of the eruption. I have also seen Turkish and Russian baths greatly aggravate the eruption. Sulphur vapor baths are certainly harmful, in my experience.

In conclusion I may say that, although lichen planus is a comparatively rare disease, still, like its first cousin, psoriasis, it is well worthy of careful study; for when recognized, and properly treated, it is curable, whereas, if neglected, it tends to remain and increase often to the very great distress and discouragement both of the physician and patient.

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OLEO RESIN of male fern is best exhibited in combination with potassium bromide to secure the expulsion of the tape worm. The object is to reduce peristaltic action.

EARLY PSYCHICAL SYMPTOMS OF TRAUMATIC BRAIN INJURIES.[1]

Read before the Section on Medical Jurisprudence and Neurology at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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The department of neurology in the practice of medicine has attained such proportions that it would be almost impossible in the limits of a single paper to give any complete history of the advances of even one year.

In this country there are six large journals devoted exclusively to this branch. Five quarterlies and one monthly, viz: *The Journal of Insanity; The Alienist and Neurologist; The Journal of Psychology; The Journal of Mental and Nervous Diseases; The Journal of Inebriety;* and *The Review of Insanity and Nervous Diseases.*

Abroad, the periodical literature is more voluminous, and books and pamphlets follow each other rapidly. A neurological library of to-day, to be complete, would number thousands of volumes and pamphlets.

This would be exclusive of the literature which appears in the general journals, comprising records of cases, theories, and discussions of diseases of the brain and nervous system.

The different fields of neurology have been studied until the specialists find it almost impossible to master more than a single phase of the subject. The lunacy specialists, the specialists of nervous diseases, the specialists of alcohol and drug diseases, the specialists of idiocy and congenital diseases, the experimenter and teacher of psychology, and the electrician are all examples.

The unknown regions of the physiology and pathology of the brain and nervous system are attracting an increasing number of most ardent students, and already the discoveries are very numerous and startling, and the process of learning and unlearning is more and more difficult. In the department of *Medical Jurisprudence* progress and change is less rapid. Seven medico-legal societies and one large quarterly present the many practical topics which are constantly appearing.

The confusion of theory and practice in both law and medicine, relating to questions of crime and responsibility, has given rise to many strange conceptions of the teachings of science. Thus, from the text books and legal rulings of judges, the lines of sanity and insanity are laid down as absolute facts. Free will, and accountability, judgment, punishment, equity, with brain control and capacity, are regarded as settled facts, based altogether on theory. All these questions comprise a realm of the densest superstition and error that will continue until studied scientifi-

[1] Address by the Chairman of the Section.

cally. To-day the student of medical jurisprudence must pursue his studies above all present theories, text books and rulings of law. The questions of motive and human conduct must be decided from a knowledge of natural laws of physiological and psychological growth.

Science calls for a great revolution and evolution in the medico-legal solution of many of the disputed questions of to-day. The insane, the inebriate, the defectives of all grades and conditions, and the tramp and criminal, can never be restrained or prevented from being sources of peril to all law and order, on theory, or metaphysical abstractions of mind, or legal rulings.

Medical jurisprudence of the future must depend on the progress of scientific medicine.

Both neurology and jurisprudence are largely influenced by the neurotic element of American civilization. This is a tremendous factor in degeneration and disease, and enters into all degrees of life and living.

The family physician and general practitioner are most favorably situated to become the earliest and most accurate students of most of those confusing problems in neurology and jurisprudence.

Every year it is more and more apparent that the failure to recognize the early symptoms of brain degeneration and disease, constantly increases the army of incurables. The crowded insane asylums, alms-houses, jails and hospitals, all refer back to early neglect, and failure to recognize and apply the means of prevention and cure.

A clearer knowledge of neurology would point to conditions and methods of treatment that could be successfully applied at that time only. An outline view of some of those early stages is the central topic of this paper.

There is probably no one disease more often mistaken in its early stages than general paralysis. Even after the symptoms have become apparent, there are confusing halts, and a delusive masking of symptoms that often puzzles even experts. A long formative stage precedes the well-defined symptoms, beginning in slight changes of conduct and character, elation of spirits, increased activity of the intellect; the disposition, the manner, the temper, the habits, and general character all become altered. Then come acts and words which are unusual, the friends and associates are conscious of some change which they seek to remedy by moral advice. Finally, when some reckless conduct or strange disposition is manifest, the physician is called and the disease is clearly made out. To the patient this has no foundation in fact, and sometimes the physician joins in this belief, and explains these changes of mind and conduct from some moral basis. Symptoms of alcoholic and sexual excesses are explained in the same way. After a period extending over months and years in many cases, the disease is above all question, and beyond all medical skill. This formative stage has been attended by distress, loss, sorrow and most serious blunders. In some cases, criminal acts and sad domestic and pecuniary afflictions have marked this period. If the family physician had made an early diagnosis, and the treatment been based on this, a different history and result would have followed.

Some of the ataxies have a similar obscure, early stage, marked by psychical disturbances which are regarded as moral lapses. Nearly all forms of insanity begin with this obscure failure of the high brain centers. Early changes of temper, conduct and character, defects of emotional control, defects of reason, slight and obscure at first, and yet clearly the oncoming shadows of diseases that should be anticipated and pointed out.

These changes and early symptoms are not new to science, but in most cases, they are overlooked and seldom receive the attention they deserve.

There is a class of symptoms that are already becoming the center of serious controversy. They are not only not recognized in the early stages, but are sharply disputed by both laymen and physicians. I refer to the alcoholic, opium and other drug symptoms, which are affirmed to be purely vicious acts and the voluntary giving way to the lower animal impulses. Public opinion has sought to control them by fine and imprisonment. The medical profession accepts this theory of treatment, only asserting after a time, the use of these drugs brings on diseased states. The impulse for alcohol and other narcotic drugs is always a symptom of some form of brain palsy. There are two classes of these cases in which this fact seems very clear. The first class are those with a history of some distinct traumatism—noticeably, sunstroke, blows on the head, profound wasting illness and severe injury of any kind.

Recovery follows, but with it appear changes of temper, character and emotions, then comes the drink impulse or the use of some form of opium. These drugs cover up other changes and are interpreted to be the cause of all subsequent degeneration and disease.

Many of these cases die of pneumonia or some other acute disease, others go on to insanity and become inmates of asylums, while the majority remain as common drunkards or inebriates slowly growing worse year after year. They are treated as low, voluntary inebriates, despised, persecuted and punished, and die the centers of wretchedness and misery, and frequently leave defective families that are always burdens to the world.

The *second class* of inebriates or drug takers have a distinct history of psychical traumatism. A man previously temperate and well, will have a history of profound mental shock, such as sud-

den overwhelming grief at the loss of wife, or children, or property, or the failure to realize some absorbing ambition, or some calamity that will distress him acutely. His entire character and disposition will change, and the drink impulse will appear suddenly, without any cause, and continue persistently.

Several instances have been noted in which the effect of a railroad accident, where no external injury was produced, was the beginning of the drink impulse. The shock of sudden fear seemed to so paralyze the brain as to demand alcohol or opium ever after. In these cases, alcohol may be taken at first as a medicine and in moderation, but the degeneration which calls for it is apparent when efforts are made to discontinue its use. Another class of cases show these symptoms equally marked; thus persons who occupy centers of great care and business or professional responsibility; persons who are most active in business in the prime of life, previously temperate, who suddenly begin to take spirits and rapidly become excessive drinkers, and defenders of its value as a medicine. Such cases are soon incapacitated and die. The drink symptom is always treated as a moral condition in these cases.

In the first class of physical traumatisms some form of brain degeneration is apparent in this morbid impulse for alcohol and opium. The beginning and progress of the case confirms this.

In the second class of psychical traumatism, a brain palsy and sudden perversion of brain function and activity takes place, and the demand for alcohol and opium is the expression of this state.

In the third class, the use of spirits is a symptom of exhaustion and general brain failure.

All these forms of palsy and degeneration are rapidly intensified by the chemical action of the spirit or drug used.

The pathological condition which calls for relief by these drugs has a uniform order of events, beginning at a certain point and passing down, marked by a regular succession of symptoms, reaching a certain termination that rarely varies.

The drink craze is a symptom which should never be misinterpreted or overlooked. Any one who persists in using alcohol or opium to excess is suffering from some brain degeneration and disease, which requires medical study and care.

The use of alcohol or other drugs is, in a certain number of cases, a marked symptom of insanity. This fact has been noted for many years, and generally occurs in neurotics who, after some great strain or mental perturbation, become excessive users of spirits, and continuously or at intervals, stupify themselves with such drugs. When arrested and deprived of spirits in jails, acute mania or melancholy follows; then it appears that the spirit and drug craze were only symptoms of insanity concealed and masked by the spirits.

The facts in this direction are numerous and startling, and unknown except to the few students who are at work in this field.

Scientific study has established this fact, viz.: that the "drink craze" (meaning the impulsive, unreasoning desire for spirits or narcotics) is a symptom of disease. Whether this is so in all cases at the beginning is not yet established; yet nothing can be more certain than this, that the use of spirits will cause disease and diseased conditions in all cases.

Another fact is becoming more prominent, that the number of inebriates of all forms is increasing; and with them the army of neurotics and defectives is likewise rapidly growing larger.

The problems of causation, prevention and cure are still involved in the realms of obscurity and quackery. Great parties and numerous societies are attempting its solution from the moral side alone.

As a scientific problem, it is practically unknown, and yet, no question of modern times is so eminently one of causes and conditions that are tangible and within the range of science to understand.

The neurologist must point out the road and stimulate the family physician to study these early psychical symptoms, which, like signal flags of distress, are becoming more apparent.

Scientifically the abnormality of an increasing army of neurotics and suicidal drug takers, who receive no care or medical attention until they are chronic, is a reflection on modern medicine.

Over five million of laymen in this country are agitating the question of means and remedies to check this disease. Of the sixty thousand physicians, less than a hundred have given any special attention to the cure and prevention of this wide reaching malady.

The specialists can study these cases in asylums, but the family physician must be the scientific student to point out the early causes and remedies. The drink problem can never be solved except from physiological and psychological study. This must begin with heredity, growth, nutrition, culture, surroundings and all the phenomena of life.

The early psychical symptoms must be studied also, the traumatisms, the beginnings of pathological changes that manifest themselves in the drink impulse.

This is the path along which science must seek the solution of this problem. The temperance agitator and reformer must give way to the physician. The roar and conflict of parties and societies will die away, and only the voice of science will be heard. Then the armies of inebriates, criminals, and insane will be halted, disbanded and forced back to health and rational

living. The inebriates will be protected and housed. The saloon will disappear, and alcohol will be unknown. This will be a reality when medical men take up this study from a purely scientific point of view.

In discussion Dr. Kiernan said:

He thought that Dr. Crothers did not fully appreciate the legal difficulties in caring for the inebriate. It is only when he has reached criminality that the law becomes efficient in restraining his morbid appetite. Additional difficulty was added to these cases by the confused rulings of courts regarding tests of criminal responsibility. There were, however, signs of advancement and a disposition to yield time honored but erroneous precedents. Inebriates should have the same legal status as lunatics.

THE NEUROSES FROM A DEMOGRAPHIC POINT OF VIEW.

Abstract of a Paper Read in the Section of Medical Jurisprudence and Neurology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY IRVING C. ROSSE, M.D.,
OF WASHINGTON, D. C.

The title of this paper may seem rather an ambitious one, since the study of vital and social statistics, and their application to the comparative study of races and nations, is almost too new to furnish many principles that may serve as bases of induction. However, I purpose to state in a fragmentary way a few notes and observations bearing on the subject.

More than usual experience as a traveller has brought me in contact with various races of men under different mesological conditions. Experience and observation in this line show that, in spite of physical and moral varieties, there exists practically, for the physician, but one people, since there are no wide differences, biologically or medically speaking, in the human species; and the infirmities of men, notwithstanding their physical inequalities and the extensive range of the nosological table, are much the same the world over, no matter whether they be classified among the white, the yellow, or the black races.

I confine myself advisedly to the simple classification of white, yellow and black, as it seems to be the best for descriptive anthropological purposes, and is, moreover, that adopted by Aristotle, Cuvier, and by a recent contemporary authority, Dr. Latham.

In the consideration of ethnological subjects there seems to be an inability, on the part of some people, to rid the mind of such abstractions as geographical lines and political distinctions, though it is well known that they will not keep away disease or noxious products. Indeed, the prejudice is carried so far that one might infer the notion that being born in a stable makes one a horse. We should not lose sight of the fact that the offspring of an English man and woman in Africa will partake of the ethnological characteristics of the Anglo Saxon race for all time to come, so far as we know, and that the descendants of a black African man and woman in America will perpetuate the negro type with marked persistency. The latter fact is so well established that in studying cases of the crossing of the colored races, families have been observed in which, at the end of several generations, there were a series of children having much more than their father and mother the signs of an African mixture, going back at least to a fifth anterior generation. A woman whose father was a quadroon and whose mother showed traces of African blood, having married an Englishman of pure race, had nineteen children, all of whom showed unequivocal traces of this sixteenth of African blood (Bulletin de la Soc. d'Anthropologie, 1865, p. 288). Among the motley population of the West Indies, it is noticeable that the African negro, transplanted to a sky but a little different from his own, has scarcely undergone any physical or moral modification; in fact, he flourishes in the Antilles like the green bay tree, nature there being so much in his favor that after successive generations of mulattoes, the children revert to the negro type. Of course I do not pretend to deny the influence of meteorological conditions. Food and drink, and social and political surroundings; the conception of the remotest past and a forecast of the remotest future circumstances; everything in space, from a man's shirt to the farthest nebulæ and deepest stratum of earth that he can infer, are but parts of the tremendous whole that acts upon man, or that he can act upon.

In the climate of the West Indies, for instance, which Darwin speaks of as a great wild, untidy, luxuriant hothouse, the combined effect of humidity with extreme heat softens, relaxes and impairs the fibres in men and animals, renders them lazy, inert, phlegmatic, and reduces them promptly to a state of complete atony. In these islands of indolence, even mosquitoes are lazy, and appear supremely indifferent when compared with the ones that I have seen inside the Arctic circle in Northern Alaska. Fish are not game. It is related with some show of authenticity, as evidence of climatic result, that the tarpon has allowed itself to be caught by fishermen who dived to the bottom and placed a hook in its mouth. Mice are also wanting in the alacrity that characterizes the northern species. Imported quadrupeds weaken and degenerate rapidly. The hog alone flourishes. Frenchmen do not acclimate and flourish in the Caribbean climate as they do, for instance, in Canada, under the same isotherm as Denmark, and Dr. Rochoux declares

that families who are not from time to time recruited become extinguished in the third and fourth generation.

It is true that atmospheric vicissitudes have much to do with the sicknesses of all latitudes, and may impart a different shade of color to a malady, that is produced by a sort of anatomical determinism. Meteorological influences of the climate modify the telluric conditions, alimentation, habits, etc., yet as regards climate, observation and experience seem to be our only guides. Up to the present time, climatology has given us many figures with but few results, and topography teaches nothing upon the salubrity of a country. It does not explain why cholera is in India, plague in Egypt, and yellow fever on the shores of the Gulf of Mexico. Nor does it tell why malarial fevers spare New Caledonia, in spite of the existence of numerous marshes, and why they ravage Madagascar in spite of its grand chain of mountains.

We, of course, do not look for sunstroke and malarial fevers among Eskimo, nor for frost bites and snow blindness among the natives of tropical Africa, yet I have found locomotor ataxia equally in Hayti and New York, and have seen the prevailing geophagism of the Antilles and South America among negroes of the Southern States.

This neurosis of the function of digestion is not the exclusive infirmity of degraded and primitive negro tribes. Pathological geophagy is found among the yellow races in Java, China and Siberia. It has been observed in the white race in some of the provinces of Spain, and among the poorer classes of whites inhabiting the pine barrens and thinly settled portions of several Southern States.

Gastric depravity is not confined to human beings. Collective investigation on this subject enables me to mention numerous instances.

I have known a sow to eat her whole litter of pigs, and I have seen coprophagy in one of the elephants confined in the London Zoological Garden. On observing the habits of the fur seal during four visits to the Prybolof Islands, I have learned that these animals are in the habit of swallowing stones. The lithoborous habits were confirmed by finding in many stomachs stones weighing ½ lb. apiece. One paunch contained in the aggregate over 5 lbs. of large pebbles, and in the stomach of one sea lion there were found more than 10 lbs. of stones, some of them of great size.

If such facts as the foregoing convince the biologist of the identity of pathological phenomena occurring in the animal series with those observed in man, it is more striking from an anthropopathological point of view that there is stronger relation among diseases of men of all races, in all climates. Nervous diseases form no exception to this principle; for in a general way it is true that all species suffer nearly in the same manner when exposed to the action of the same morbid causes.

In a retrospective way it is quite possible for a neurologist to study at the present time some of the convulsive manifestations of the Middle Ages; and if we have the snake worship, magical associations and nocturnal mysteries of voodouism in Africa and Hayti, is not our own country preëminently the land of spiritualists, mesmerism, soothsaying, and mystical congregations?

Much of my practice having been among Jews, I have had occasion to notice the calm, sober, and sedentary manners of that cosmopolitan race, in whom the prolonged influence of climate has certainly caused no material transformation of type. The world over, they preserve the Semitic stamp, and observe the excellent hygienic code that secures them such pathological immunity that it is said they are less often struck by lightning than other people. On the other hand, the phenomena of nervous and mental disease are more frequent in them than in other races.

We find familiar examples of strange nervous manifestations in such circumstances as a dance among the Sioux Indians, or a revival among the Anglo-Saxons at a camp-meeting. At both many of the participants will sing, laugh, weep, foam at the mouth, and fall exhausted in a faint or swoon.

Analogous conditions of nerve disturbance may be found equally among the black inhabitants of equatorial latitudes and the Hyperborean Mongoligæ who live under the midnight sun. Besides gross anatomical differences in the negro and a difference of personal essence, so to speak, we find an obtusion of peripheral sensibility, said to be owing to flattening of the tactile corpuscle. There is a want of fineness in the reflexes, lessened sensibility to alcohol, small intensity of nerve action, and, according to some observers, difference in the electrical state. I have noted similar things among the Eskimo of Bering Strait, the Tchutchkis of Arctic Siberia, and among the Innuit population generally. The nervous derangements of the Northern tribes, who, by the way, believe in and practice Shamanism, go to show that nervous diseases are not, as many people believe, confined to civilization. Among these people I have seen insomnia, epilepsy, chorea, cerebral hæmorrhage, paraplegia and hemiplegia, and suicidal mania.

A nervous affection known in the State of Maine as the jumping disease, has its analogue in the Siberian *emeryaki*, so prevalent in the vicinity of Jakutsk. I may remark incidentally that, in the original account of this affection given to the public, the word was incorrectly spelled. Dr. Bunge, of St. Petersburg, writes me that it should be written *emeryaki* in order to

approximate its Russian pronunciation. There is, besides, *emeryak*, the male patient; *emeryaki*, *emyraka*, the female patient; and finally a verb, *emeryatschitz*, to be affected with this disease. My friend, Lieut. Schutze, of the Navy, who has seen much of this disease, thinks it is owing to excessive consumption of tea and tobacco, and psychic depression of isolated communities and long polar nights.

The ancient habit of tattooing is still common among school boys, sailors, soldiers, criminals, and prostitutes living in so-called civilized communities. The practice, generally confined to a low grade of development and originating in perversion of the sexual instinct, is found pretty much over the world, notably in the Polynesian Islands and some parts of Japan, and I have been struck with the similarity of design on the chins of women when visiting two places so far apart as Morocco and Saint Lawrence Island. To anticipate criticism for mentioning what may seem a very trivial subject, I would say that tattooing is significant from a medico-legal point of view, no less a person than the Lord Chief Justice of England, having characterized it as a matter of vital importance.

As regards perversions of the sexual instinct and outrages on morals, our common humanity seems to have much the same aptitudes and instincts, regardless of the points of the compass.

Even a superficial observance of the sexual morals of the Eskimo causes one to smile at Lord Kame's "Frigidity of the North Americans," and at the fallacy of Herder, who says: "The blood of man near the pole circulates but slowly, the heart beats but languidly; consequently the married live chastely, the women almost requiring compulsion to take upon them the troubles of married life," etc. Nearly the same idea, expressed by Montesquieu and repeated by Byron in "Happy the Nations of the Moral North," are statements so at variance with my experience, that this fact must alone excuse a reference to the subject. So far are they from applying to the people in question that it is only necessary to mention, without going into details, that the women are freely offered to strangers by way of hospitality, showing a decided preference for white men, whom they think beget better off spring than their own men. In this regard one is soon convinced that salacious and prurient tastes are not the exclusive privilege of people living outside of the Arctic circle; and observation favors the belief in the existence of pederastry among Eskimo, if one may be allowed to judge from circumstances not necessary to particularize, and from a word in their language signifying the act.

Coming nearer to home, we find that paranoia and general paresis are more common in the white race as they come under the civilizing influences of town life, the bad features of which are increased consumption of tea, alcohol and tobacco, exposure to venereal disease, and the unequal distribution of wealth. The same causes seem to have produced an anotomical determinism in the black race, among whom suicide and insanity were rare before the civil war, which goes to show that such affections are modified by mesological causes rather than by race.

I trust that the foregoing experiences, incomplete as they are, may call the attention of others to the study of pathological anthropology in its bearing upon nervous diseases; and if any observation of mine shall prove genetic enough to broaden the enthusiasm of the medical man, and enable him to show less hesitancy in the treatment of disease, then I shall not regret having claimed your attention.

In discussion of Dr. Rosse's paper, Dr. Osler referred to the remarkable fact that chorea was rare in the Indian and negro, also that locomotor ataxia was rare in the colored race, while syphilis was common. On the contrary, hysteria was a frequent disease among negroes.

Dr. Hughes said that Dr. Beard had made the observation that nervous diseases were relatively less frequent in the South than in the North.

Dr. Kiernan recalled that Dr. Spitzka, Dr. Bannister and himself had made a study of ethnological psychiatry. Paretic dementia, for example, was present in the negroes of New York and Chicago, but absent from those in the South. The reason for this was found in that in the cities named they were exposed to the same conditions that produced the disease in the white race.

Dr. Rosse, in closing, said that he had recently seen a case of locomotor ataxia in a full-blooded negro.

STATUS EPILEPTICUS.

Read in the Section of Medical Jurisprudence and Neurology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

BY G. R. TROWBRIDGE, A. M., M.D., AND C. B. MAYBERRY, A.M., M.D.,

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It should be a source of regret that a prominent writer and authority in medicine, in the description of epilepsy, in his work on practical medicine, makes this statement: "As regards the immediate danger from the paroxysms, the prognosis is always favorable;"[1] and, moreover, he makes but bare mention of the condition status epilepticus, when in reality it is the most serious phase epilepsy assumes. It is for the very reason that but comparatively little consideration has been given to this condition by the

[1] Flint: Principles and Practice of Medicine.

profession, excepting the medical men connected with institutions for the insane, that it has been chosen the subject of a paper, with the hope that, without being obtrusive, a somewhat systematic description and a few suggestions in regard to the treatment of such cases may be given, which may be of some interest and value.

The alarming mortality among epileptics, shown by the reports of our asylums and hospitals for the insane, and due in a great measure to status epilepticus, makes constant demands for new suggestions and ideas in the treatment of these cases; and when, moreover, it is taken into consideration that every individual, whether in an insane asylum or not, who has fallen prey to the as yet unexplained disease, idiopathic epilepsy, either in a mild or severe form, may at any time be attacked with this almost surely fatal phase of the disease, it would seem that any point, either in clinical history, pathology or treatment, must be of interest to the profession, and certainly to the neurologist and alienist.

This paper has been prepared in the hope that it may possibly advance some new ideas, and at least be a reminder of this extremely serious phase of epilepsy.

As to the cause or causes productive of idiopathic epilepsy, we must, as yet, say we do not know, and consequently the same statement must be made in regard to status epilepticus; so the treatment of these cases will of necessity be dependent upon theory and symptoms.

Whether or not epilepsy is an entity and has but one cause in its production, or is a disease resulting from a number of factors, it is well known that it varies in intensity from a form which but slightly interrupts the daily routine of life to one which utterly destroys the individual physically, mentally, morally and socially, and no matter how mildly the neurosis may exhibit itself in a special case, the individual has the taint of lesion, which at any time may be productive of violent convulsions, and in a few hours carry its victim into eternity.

It is as if one were standing near a comparatively innocent and harmless stream; but the bursting of a dam sets in motion the pent-up flood, and in an instant he is swept into oblivion.

If we accept the theory of J. Hughlings Jackson regarding the cause of epilepsy, viz., an overdischarge of nerve force, or energy, from the brain cortex, we might define status epilepticus as a continuous, rapid and violent discharge of this nerve force, followed by a condition of extreme stupor verging upon coma, or, in place of the stupor, a period of maniacal excitement, though this latter is extremely rare.

Status epilepticus can scarcely be considered a special form of epilepsy, nor is it all correct to make it a distinct disease, but, on the contrary, it should be regarded as a climax of epilepsy.

A condition resembling status epilepticus may result in epileptics in whom the disease is caused by gross lesions, as tumors, cysts, etc., and to a considerable extent it is analogous to the epileptiform seizures, and consequent condition of paretic dementia; but it is not the purpose of this paper to treat of such cases.

In order to preserve as far as possible a systematic order in the consideration of the subject, the following headings are given:

1. The clinical history.
2. Resumé of cases treated.
3. Notes of autopsies.
4. Prognosis.
5. Treatment.

The clinical history of status epilepticus, "etat de mal," or "les séries," of the French, or, as Charcot calls it, "the epileptic acme," from observations made by the writers upon the cases to be cited hereafter, is as follows:

A rapid succession of convulsions, usually of "grand mal" type, with intermissions varying from a few seconds to a few minutes, and often following one another so closely that they resemble one continuous convulsion, the patient being in a stuporous or even comatose condition in the intervals.

The pulse and breathing are greatly accelerated, the former being weak and irregular; there is deep congestion of the face and neck and intense throbbing of the carotids.

The temperature rises rapidly, until it has reached 104°–107° F., and there is often a difference in the temperature of the two sides, the greatest heat being on the side which is most convulsed.

As the convulsions increase in frequency and violence, there is a corresponding rise in the temperature and a deepening stupor or coma in the intervals. The conjunctivæ are insensitive; the pupils are widely and (as a rule) evenly dilated, though occasionally there is a difference in size, and are not affected by light; patient is bathed in a cold sweat, though the skin feels intensely hot; sordes appear on the gums and teeth, and the bladder and bowels are involuntarily evacuated. This condition may last from one to several hours; but, as a rule, the convulsive stage is of comparatively short duration, though occasionally it is prolonged.[2]

Death may occur in this stage from exhaustion, or the convulsions may cease and the patient pass into the second or stuporous stage.

This stage is characterized by an intense stupor, total abolition of sensation and motion, exceedingly depressed heart's action, and a consequent dyspnœic condition. The temperature re-

[2] One patient in the West Riding Asylum had 1,849 convulsions, covering a period of fifteen days. Delasuiave reports a case where the first stage lasted a month, the patient having 2,500 fits. A patient in the Northern Michigan Asylum had 3,000 in three weeks

mains above normal, though not as high as in the convulsive stage.

There is paralysis of the muscles of deglutition, very often irritability of the stomach, and sometimes profuse diarrhœa; bed sores appear; the tongue is dry and coated; increasing sordes on the teeth and gums, and, in short, everything points to a rapid dissolution. The second stage lasts from one to several days.

Charcot[3] makes two classes of status epilepticus, viz., "the minor acme ('les petites séries'), constituted by from two to six fits, and the major acme ('les grandes séries'), in which from twenty to thirty fits have been reckoned in the twenty-four hours." It would hardly seem that this division is necessary, for the very reason that it is an extremely rare occurrence for from two to six fits to produce the stuporous stage of the status proper. Evidently Charcot regards the convulsive stage as constituting status epilepticus without including the comatose stage. Hence his two classes.

Rosenthal[4] gives the following description: "Another severe form of epilepsy is described under the name of status epilepticus. It presents the following characteristics: Rapid succession of attacks, presenting slight remissions and without return to consciousness (convulsive stage); a comatose condition secondary to these attacks, with abolition of reflex power, except during short periods of temporary increase (meningeal stage); more or less complete and permanent hemiplegia; acceleration of the pulse and respiration; and especially a marked elevation in temperature (40°–43° C.), which persists even in the intervals of the paroxysms, and may increase after their disappearance. The duration of these attacks may vary from three to nine days; more than one half the cases terminate in death."

Putzel[5] gives the clinical history in the following words: "The prodromata do not differ in any respect from those which are usually experienced by the patient prior to the ordinary attack of convulsions; but the fits, instead of ceasing, follow one another rapidly, and before the epileptic coma has entirely disappeared, another convulsion makes its appearance. The intervals between the fits become shorter and shorter, until they run into one another and finally the patient appears to be in one long continued convulsion.

"The pulse is regular, but usually small, the respirations become frequent and labored. The temperature begins to rise from the very beginning, and may rapidly reach a height of 104°, 105° or 107° F., and upward. The skin is hot and scorching, the face is covered with an abundant, viscid sweat. Marked nystagmus is present, and the face and neck may be drawn to one side. The pupils are dilated, either equally or unequally, and do not react normally to light.

"After the convulsions have lasted some time, hemiplegia develops in a large number of cases, the face and limbs being affected as in ordinary hemiplegia. . . . The sensorial and intellectual functions are totally abolished, and the patient lies in a profound stupor, which often deepens into coma." . . .

Secondary or Meningitic Stage.—"At the close of the first stage the convulsions become more infrequent, and finally cease, but another series of symptoms develop. The intelligence is more or less affected, and the patient is in a condition of hebetude or coma." The author goes on to say that in this stage the coma may be replaced by maniacal excitement, general disturbance of nutrition, emaciation, bed-sores, and a gradual dissolution or an extremely slow recovery.

Bevan Lewis[6] describes it as follows: "If the attacks succeed each other rapidly and consciousness is not restored between the convulsive seizures, if fit succeed fit at intervals of a few moments only, the patient remaining comatose, we have developed what is termed the status epilepticus, a condition of most serious import.

"The pulse and breathing become quickened; . . . the temperature rises to 105° or 107° F., with deepening coma or stupor. . . . As the fatal termination approaches, the convulsions become more frequent, a few seconds only intervening between each discharge, so at times they appear almost continuous, a fresh discharge being only recognized as a slight increase in the intensity of the convulsions.

"When this period arrives, however, the epileptic discharge becomes progressively feeble, and the fit may be characterized by a slight turning of the head and eyes to one side, with slight clonic movements of the limbs or merely convulsive twitchings of the mouth, with conjugate deviation. The conjunctivæ are, of course, quite insensitive, the pupils being widely dilated and fixed to the strongest glare of light, while the face and body are bedewed with a cold sweat. Often the temperature exhibits unilateral deviations, being highest by a degree or more on the side first (or most) convulsed. If the patient recover, the fall of temperature is most rapid on this side until a balance is established, and subsequently an equal and continuous decline of temperature proceeds on both sides. . . . The mortality from status epilepticus is said to be due to (*a*) collapse and (*b*) to meningitis." . .

Bourneville[7] in his treatise characterizes status epilepticus: 1. By the frequent repetitions of the convulsions, which may even become almost

3 Charcot: Diseases of the Nervous System.
4 Rosenthal: Diseases of the Nervous System.
5 Putzel: Functional Nervous Diseases.
6 Bevan Lewis: Text Book of Mental Diseases.
7 Bourneville: Études Cliniques et Thermométriques sur les Maladies du Système Nerveux, 1873.

continuous with one another; 2, by a variable degree of collapse, which may deepen into a most profound coma, unattended by any return to consciousness; 3, by a more or less complete hemiplegia, developing after a variable duration of the symptoms; 4 by increase in frequency of pulse and respiration; 5, by considerable elevation of temperature, which persists in the brief interval between the convulsions. He, with others, divides it into two periods—a convulsive and meningitic.

Calmeil, Trousseau, Delasuiave, Gowers, Webber and Blandford give more or less on the subject; but as their statements are covered by the authors already quoted, it is useless to give them here.

Twenty cases of status epilepticus have come under the observation of the writers; but only twelve are cited, as the remaining eight would only be repetitions of the others.

Case 1.—Male, aged 25; congenital imbecile; family history shows marked neurotic taint; had scarlet fever when 15 years of age, and soon after recovery epilepsy appeared; has had an average of ten fits a month since development of the neurosis; physical condition much impaired. During November, 1888, had three fits; December, eleven, and January, twenty-four.

All of this time he was taking a mixed tonic and bromide treatment. On February 24, at 2 P.M., after an interval of several days without fits, he had a severe convulsion, followed by others in rapid succession, averaging one every two minutes for the first hour. At three o'clock his temperature was 102° F., respiration 30, pulse 106, skin hot and covered with perspiration, pupils dilated equally and not reacting to light, face much congested; unconscious, though not having a convulsion at that time. Ether was given and carried to surgical anæsthesia, with a cessation of the convulsions. Given chloral hydrate, grs. xxx, by rectum. Slept well until 9 P.M., but on awakening he immediately went into a series of convulsions, having thirteen in twenty minutes. At 9:30 P.M., temperature was 104° F., respiration 35, pulse 130. Ether was again administered, and morphiæ sulph., grain ¼, hypodermically. February 25: Slept well during the night. This morning he lies in a stupid condition; temperature 105.6° F.; respiration 41, pulse 129, cold sweat over entire body, pupils dilated and insensible to light. Given nourishment and stimulants by stomach-tube. Remained in this condition until death, at 5 P.M. Duration of attack, fifty-seven hours; number of convulsions, forty-three.

Case 2.—Male, aged 28; congenital imbecile; had scarlet fever when ten years old, and immediately after developed epilepsy; no known heredity. During February, March and April, 1889, he had one fit while under tonic treatment. On May 2, between 1 and 5 A.M., he had one hundred and six convulsions; at 5 A.M., temperature was 104.5° F., respiration 32, pulse 130. The fits followed each other with very short intervals, the patient being unconscious. Chloroform was administered, and continued for a half hour; ol. tiglii. gtts. iii, followed by profuse evacuations. In this case the convulsions were general, but stronger on the right side; right hemiplegia followed the attack. Patient sank into a stupid condition which lasted five days. During this time the temperature and pulse were constantly above normal, the gradual return to consciousness being preceded by an even fall of temperature. Sordes collected on the teeth; tongue brown and dry. The reflex action of the eyes was lost, and death seemed imminent. Stimulants and nourishment were given constantly by the nasal tube. On the fifth day he recovered consciousness; the temperature slowly fell to normal. Rapid improvement followed, and in ten days he was able to be about the ward. The total duration of the convulsive and comatose periods was about ten days; number of convulsions, one hundred and six.

Case 3.—Same patient as Case 2. On October 27, 1889, was found in the morning in a comatose condition, which, without doubt, resulted from his having passed through the convulsive stage of status epilepticus during the night. Temperature 105° F.; impossible to arouse him from the deep coma; pulse weak and intermittent. Stimulants and nourishment given per nasal tube. The physical exhaustion was so great that the man sank rapidly, and died eight hours after first being seen.

Case 4.—Male, aged 30; neurotic family; epileptic from childhood; no specific history; in good physical condition. Has had several attacks of status epilepticus, of which no record has been kept. These attacks were all marked by the large number of convulsions, their severity, the rapidity of their occurrence, and the short intervals between them. On February 21, at 3 P.M., the convulsions began while the patient was outdoors. When first seen he had had fifteen convulsions within a half hour and was in an extremely exhausted condition. Temperature 102° F., pulse small, body covered with cold perspiration. The convulsions were general and of uniform severity on the two sides. Coninæ hydrobrom., gr. $\frac{1}{100}$ was given hypodermically. One convulsion followed the injection, after which the patient sank into a quiet sleep, lasting six hours. On awakening his condition seemed much improved; temperature 99.8° F., pulse 106; conina, grs. $\frac{1}{100}$, with digitalin, gr. $\frac{1}{1000}$, given hypodermically. Slept during the night without convulsions. Next morning he was much better, though very weak. Stimulants and nourishment. Two days after was about the ward as well as before the attack.

Case 5.—Same patient as Case 4. On April 15 had twenty convulsions, followed by great exhaustion. Given ether to anæsthesia, chloral, grs. xxx, by rectum. At intervals for twenty four hours he had convulsions of a more or less severe character, followed by stupor, from which he could not be aroused. Stimulants, nourishments, injections of ether, digitalin and atrophiæ sulph. were given without effect. Patient gradually failed and died ten days after. The highest temperature in this case was 105.2 F., which occurred just before death. For some weeks before each of these attacks the patient had been taking bromide treatment.[8]

Case 6.—Male, aged 45; no known heredity; cause of epilepsy unknown; bodily in good health; weight 170 pounds; has very few epileptic convulsions, usually not more than six in a year; during the four months before the attack had three convulsions; several previous attacks of status epilepticus. This attack began May 4, 1889, at 7 A.M., and in one hour he had thirty-two convulsions, which were continuous, the intervals between the fits being marked only by a slight diminution in the severity of the convulsions. At 8 A.M., there were no signs of exhaustion; temperature 100° F., pulse 90. Given ether to anæsthesia and morph. sulph. gr. ⅓, hypodermically. No diminution in convulsions except while under ether. At 9:30, chloral, grs. xxx, by rectum, after bowels had been moved by enema. At 11 ether was given and carried to surgical anæsthesia, without effect. At 12 coninæ hydrob., gr. $\frac{1}{100}$, hypodermically; a few minutes after he had a single fit, and this was followed by sleep. This same dose was repeated at 6 and 9 P.M. Slept all night. No convulsions in the morning, no excitement. An interesting feature of this attack is the absence of excitement, which has always before followed status epilepticus in this patient.

Case 7.—Admitted July 8, 1889. Male, aged 38; family history of insanity and epilepsy. On January 4, 1890, was attacked with status epilepticus, though since admission has only had five convulsions; fits followed each other so closely that attendants were unable to count them. When first seen, the convulsive stage had nearly ceased. Ether was administered, and morphine hypodermically. The convulsions were stopped entirely, but the man died in the second stage from exhaustion forty-eight hours after the commencement of the attack.

Case 8.—Male, aged 26; no known heredity; a deaf-mute; febrile disease in early childhood is the supposed cause of epilepsy; has had an average of five epileptic fits a month while under a mixed tonic and bromide treatment; physical condition is usually good, but at present somewhat impaired from constant use of bromides. May 25 had a series of convulsions in the night, number unknown, but when first seen he was passing from one fit to another without any marked interval. Given hyoscine hydrobrom., gr. $\frac{1}{100}$, hypodermically, at 4 A.M. Slept until 7 A.M., and was then awakened by a convulsion, which was immediately followed by others; given amyl nitrite by inhalation, without effect; ether administered, and chloral, grs. xxx, per rectum, with but a temporary cessation of convulsions; 12 M., coninæ hydrobrom., grs. $\frac{1}{100}$, hypodermically, after which the fits ceased and sleep ensued. At this time his physical condition was bad; temperature 104° F., pulse 142, body covered with cold perspiration, face cyanotic, hands and feet cold. At 9 P.M. he was somewhat restless, although there had been no recurrence of the convulsions; slight muscular movements in different parts of the body. Given nourishment and whisky per nasal tube, an enema, digitalin and coninæ hydrobrom., āā, gr. $\frac{1}{100}$, and atropiæ sulph., gr. $\frac{1}{80}$, hypodermically. Slept during the night without a convulsion, and is less stupid this morning; takes nourishment and stimulants. From this time he improved gradually, and in five days was about the ward again.

Case 9.—Same patient as Case 8. For past two months has had no convulsions under a mixed tonic and bromide treatment. August 20, at 2:30 P.M., an attack began similar to the last; physical condition much better than at time of last attack. When first seen had had thirteen convulsions; temperature 100° F., pulse 110. Given coninæ hydrobrom., gr. $\frac{1}{100}$; slept until evening without convulsions and was in good physical condition; takes nourishment this morning, and was able to be about the ward on the following day.

Case 10.—Male, aged 46; family history shows a predisposition to nervous disease; duration of epilepsy unknown; has a history of syphilis twenty years ago, but there is no indication of cerebral disease or that his convulsions are not true epilepsy. At the time of his attack he had had no convulsions for several months. On December 16, 1890, had three fits in the afternoon, followed by seven in the evening without physical failure. At 9 P.M. given coninæ hydrobrom., gr. $\frac{1}{100}$; slept during the night without recurrence of the fits. At 8 A.M. convulsions again occurred the same in character as before. Given chloral, grs. xxx, and potass. bromide, grs. 60, by stomach, without effect, also morph. sulph., gr. ⅓, and atropiæ sulph., gr. $\frac{1}{80}$, with the same negative effect; at 11 P.M., coninæ hydrobrom., gr. $\frac{1}{50}$, with an immediate cessation of the convulsions. Patient rapidly improved, and in two days was in his usual health.

Case 11.—Male, aged 45; family and previou

[8] Bromide of ammonia, bromide of sodium, āā gr. xv., suspended in a tonic mixture, t. i. d., and a pill of oxide of zinc, extract of belladonna, āā. gr. ¾, at night.

history unknown; has had previous attacks of status epilepticus, all having two points in common, viz.: 1. The large number of fits and their rapid occurrence, and 2, a state of secondary consciousness following such attacks in which the patient was greatly excited and very brutal; violent to any one who came near him. Physical condition good; has had three fits in the last three months. On May 10, at 4 P.M., he had a severe convulsion, followed by others with intervals of about two minutes between them. At 4:20 he was etherized, after taking chloral hyd., grs. xxx, and potass. bromide, ʒ i. On coming out of the anæsthetic, no convulsions occurred until 5:30 P.M. At 6 he was given coninæ hydrobrom., gr. $\frac{1}{100}$. Slept during the night without convulsions. No attack followed this, and the man rapidly returned to his usual condition. The highest temperature during this attack was 104° F., pulse 110.

Case 12.—Same patient as Case 11. Physical condition impaired; no convulsions for several weeks. September 30: had twenty-three fits between 11 A.M. and 12:30 P.M. Given coninæ hydrobrom., gr. $\frac{1}{100}$. Convulsions ceased. Slept until 7 P. M., when the convulsions again commenced; coninæ repeated with same good result. October 1, had several severe convulsions, followed by unconsciousness, stertorous breathing and right-sided hemiplegia. After being in this condition for about fifteen hours, death occurred. Temperature in this case ranged between 103° on the first day of the attack and 107° at time of death.

Such are the histories of twelve attacks of status epilepticus.

Of the twenty cases which have come under our care, four were examined post-mortem.

These examinations showed certain points common to all: 1. A lack of symmetry in the two hemispheres, which is so often found in epileptics; 2, an inequality in the weight of the two hemispheres, also quite common in epileptics; 3, more or less extensive decortication; 4, intense engorgement of the brain and its membranes—the sinuses were filled with blood, the vessels of both the dura and pia were distended, the brain on section showed the puncta vasculosa to a marked degree; 5, in all four cases, and especially marked in two, serous effusion into the ventricles and arachnoid space.

In one of the cases there was softening of the first and second temporo-sphenoidal convolutions on the right side. In another, which showed all the symptoms of apoplexy toward the end of the attack, a large hæmorrhage from the middle cerebral artery on the left side was found.

In a third case, in which death occurred instantly and during a convulsion, a small hæmorrhage was found in the medulla.

In none of these four cases was the cause of the status epilepticus found, and in only two was there evidence of the immediate cause of death. The others, in all probability, died from the exhaustion consequent upon the convulsions.

The prognosis of status epilepticus is very unfavorable, the mortality being estimated at fifty per cent. The violence and frequency of the convulsions; the high temperature; the rapid, weak and irregular pulse; the consequent comatose condition, with its accompanying extreme depression, are all factors of such grave import that the outlook in most cases is very serious. Besides this, we must take into consideration the mechanical action brought into play, viz., the intense and powerful contractions of the muscles during a convulsion, which by exerting an irresistible pressure on the vessels, force the blood into the cerebral vessels, thus producing the great engorgement, with imminent liability to cerebral hæmorrhage.

Even though the individual passes safely through the status, hemiplegia often results, leaving him in a weak and helpless condition, and totally unable to withstand a second attack.

The three most probable modes of death are: 1, exhaustion; 2, from cerebral hæmorrhage; 3, from serous effusion.

Treatment.—In a condition like status epilepticus, where the life of the individual may be destroyed in a few hours, any measure which will abort the attack is of the greatest importance. Our treatment must be chiefly symptomatic, at least until more is known of the pathological condition than we know at present. There are two important indications for treatment which must be met in each case: 1. To bring the convulsive period to an end as quickly as possible, and 2, to sustain the life of the individual through the stupid or excited period which may follow the attack.

1. In order to meet the first indication for treatment, a large number of drugs have been tried, with a view of depressing the motor centres of the cerebrum or cord, or of paralyzing the efferent nerves, or all of these, and thus preventing a fatal termination, either by diminishing the number of convulsions, making them less severe, or preventing them altogether. Among the therapeutic measures suggested to fulfill this indication, we shall consider only those with which we have had personal experience in our own cases. These include the following: Ether, chloroform, chloral hydrate, bromide of potassium, nitrite of amyl, sulphate of morphine, sulphate of atropine, hydrobromate of hyoscine, salicylate of physostigmine, and hydrobromate of conine.

Ether and chloroform are given with the purpose of immediately stopping the convulsions by paralysis of the motor centres of the cerebrum and complete muscular relaxation.

However successful these may be in the convulsions of Jacksonian epilepsy, in our experience in cases of idiopathic status epilepticus they are but temporary measures, the convulsions ceasing only when the point of surgical anæsthesia has been reached, and coming on again before the patient has regained consciousness. They are of great use, however, in preventing the convulsions when exhaustion is imminent, while waiting for some other agent to act. Either may be used; but in a case where the heart and respiration are already in a weakened condition, ether would be the safer.

Chloral hydrate by the rectum has succeeded in some cases, but has more often failed. In giving this drug, it has been the custom to keep the patient under an anæsthetic during its absorption, giving grs. xxx, and repeating it in an hour if necessary. Although acting as a depressant of the spinal cord and brain, yet the amounts which can be given with safety are usually too small to produce the desired effect. We have not used it hypodermically, but it seems probable that used in this manner the results would be much better.

Bromide of potassium has been given in several cases in combination with chloral hydrate, but without any good results. If, as in several of our cases, status epilepticus follows a course of bromide treatment, very little could be expected from it, and indeed in any case, its action is so slow that but little could be hoped for from its use. In the few cases in which we have tried it, it has been given in doses of ʒi–ʒii.

Nitrite of amyl is highly recommended by some authors; but repeated trials have failed to establish its value. It has been given by inhalation, ♏ x, repeated at intervals. Although undoubtedly useful in preventing an impending convulsion of ordinary epilepsy, it has proved of but little value in the cases of status epilepticus in this hospital.

Sulphate of morphine has succeeded in one case in which gr. ⅓ was given hypodermically during ether anæsthesia; but in several other cases in which it was used it failed to change the course of the attack in any appreciable way, although given in doses of gr. ¼–½, hypodermically.

Sulphate of atropine, in any safe dose, acts strongly upon the cardiac and respiratory centres and upon the pneumogastric nerve, but very slightly upon the motor nerves of voluntary muscles. Carried further than this, it stimulates the cardiac sympathetic and paralyzes the pneumogastric, and in consequence there results a rapid heart failure. For this reason it is impossible to stop the convulsions without cardiac failure. Its immediate effect has been good by its stimulating action on the vagus and the resultant improvement in the character of the respiration and circulation. Although it has been used with a view to stopping the convulsions, it is of more value in the second stage of neurosis.

Hydrobromate of hyoscine, if given in sufficient amount hypodermically, produces almost immediate sleep, affects the motor tract of the spinal cord and cerebral cortex, and in a case in which its use is not contraindicated by weakness of the heart or respiration, its employment promises good results. In the cases in which it has been used, the convulsions have quickly ceased, the heart's action has been slightly depressed after a short time, the respirations have been more frequent and less full, and sleep has followed, lasting from two to eight hours, with a recurrence of the convulsions on awakening, and an improvement has occurred in the patient's condition. Although hyoscine has failed to bring the attack to an end in any of these cases, yet the rest and freedom from convulsions for several hours, with the resulting improvement in the bodily condition, would indicate its use as a temporary measure. It has been given in doses of gr. $\frac{1}{80}$–$\frac{1}{100}$, hypodermically, its success in acute mania when given by this method, and its almost complete failure when given by the stomach, suggesting a similar result in status epilepticus.

Salicylate of physostigmine, gr. $\frac{1}{60}$, was given in one case with a view of depressing the cord sufficiently to stop the convulsions, but without success.

Hydrobromate of conine was first used in a case in which most of the other measures in this list had failed, and its use was followed by an almost immediate cessation of the convulsions. Its action is from the periphery, extending toward the centre, the motor nerves being chiefly affected, the sensory nerves remaining almost unchanged. When a case in which it has been given is carefully watched, the following results are noticed: 1. Weakening of the convulsive movements, beginning at the lower extremities, and extending upward over the trunk and upper extremities, and last the head and face, with finally a complete cessation of the movements if a sufficient amount has been given; 2, slight dilation of the pupils and ptosis; 3, some impairment of general sensibility; 4, heart slow and full, respiration slow and labored; 5, combined with sulphate of morphia, sleep follows, lasting several hours; 6, if the convulsions are to return, as the influence of the drug is lost, fibrillary contractions, beginning above and passing downward—that is, in the opposite direction from what they ceased—and finally the general convulsions are reëstablished. This drug has been given in small doses, gr. $\frac{1}{100}$–$\frac{1}{70}$, hypodermically, and repeated as often as indicated, the administration being guided by the character of the respiration. It has usually been combined with sulphate of morphine to produce sleep, and sulphate of atropine to act as a stimulant to the

respiratory and circulatory organs, and also at times with digitalin and hyoscine. Only two of the cases in which it has been used have terminated unfavorably. In the first it stopped the convulsions; but they recurred, and cerebral hæmorrhage complicated the case. In the second case it was given, as were all the drugs mentioned, the only measures attended with any success being the administration of ether and chloroform, until there was complete muscular relaxation; and in this case the patient died suddenly, while in a fit, from hæmorrhage into the medulla. In several of the cases, conine and a small amount of morphine have been the only drugs used. Although it failed to control the convulsions in one case, yet it has been the most successful method of treatment tried, and its results encourage us to believe that it will succeed in the majority of cases of status epilepticus.

2. The exhaustion of the patient gives the second indication for treatment. In almost every case of status epilepticus, before the convulsions can be controlled there are evidences of physical failure; the pulse is rapid and weak, the respiration shallow and increased in rapidity, the temperature raised several degrees above normal, and a profuse perspiration covers the body, all of which call for immediate treatment in order to carry the patient through the dangerous period. The condition of the patient usually prevents the administration of food or medicine by the mouth, although if introduced into the stomach they will be retained. To fulfill this indication, we have introduced two methods: 1. The hypodermic use of such agents as atropine, digitalin, spt. frumenti and quinine sulph.; and 2, the introduction of milk, eggs and stimulants into the stomach by means of the nasal and stomach tubes, on account of the inability to swallow; artificial introduction of food into the stomach being especially called for in cases in which the stupid or excited periods are of several days' duration.

The conclusions drawn from this paper are as follows:

1. On account of its association with epilepsy, status epilepticus should not be considered a distinct disease, but merely a climax of the neurosis.

2. It consists of two stages: 1. A convulsive, and 2, a comatose, though the latter is sometimes replaced by a period of maniacal excitement.

3. That there is no demonstrable lesion causative of the status.

4. That the prognosis is unfavorable.

5. That the treatment is in a measure symptomatic, but considerable reliance can be placed upon the hypodermic use of the hydrobromates of hyoscine or conine combined with the sulphate of morphine.

FUNCTIONAL BRAIN DEGENERACY.

Read in the Section on Medical Jurisprudence and Neurology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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It is interesting to notice how much we are given to the habit of grading and estimating others in society. We are continually engaged in this kind of work, and we consider the opinions we have of our acquaintances and associates as very valuable items of information. So intuitive and instinctive is this kind of work that we do it unconsciously, as it were; and as soon as we make an acquaintance, we find ourselves silently estimating and classifying him.

The two particulars in which we generally consider it very important to estimate others are, first, their intellectual ability; and secondly, their ethical sense. We call these "mental and moral qualities," and recognize that they are more or less distinct and separate.

In common with all other living beings, man lives in competitive life; and so fundamental and continuous, from the earliest existence of life in the world, has been the necessity of alertness and observation in order to survival and continuance, that man, in common with all other sentient beings, has acquired a constant sense of insecurity on account of rivalry. We are all born with an instinctive knowledge of this fact. It haunts us from our earliest consciousness, and it follows us all through life. By highly advanced and improved brain capacity, and by suppression of rival species, man has so widened the distance between himself and lower grades that, comparatively, he recognizes little danger from that direction. His principal rival is his fellow-man.

It is this instinctive sense of insecurity on account of rivalry, that begets the instinctive habit in us of grading and estimating our fellows.

We wish to know at once how formidable a competitor our new acquaintance will prove, hence we promptly grade him in intellectual ability; and we wish to know whether he will conduct his competitions or associations with us in accordance with established and advanced rules of decorum and propriety—hence, with equal promptness, we grade him in ethical sense.

By the long progress of practice, we have become exceedingly expert in this kind of work. Some boast they can frame an opinion from as slender a foundation as expression of face, the cut of the eye, the step on the pavement, the handwriting, the tone of voice, or style of dress. Of course such expressions are exaggerations, still they show how adept we have become, and how much we value such information.

As we estimate men in these particulars, we grade them into types, from the lowest savage, who is both very ignorant and very immoral, to

the highest civilized, who is both highly intelligent and highly moral. Between these extremes there is every conceivable grade, variety and type.

In the gradual rise of man from the state of savagery to that of civilization, his steady progress is occasioned by and marked by gradual improvement in both these particulars. There is a steady improvement in him of intelligence, and a steady improvement in him of ethical sense.

We readily recognize that the person who succeeds and excels is the intelligent one. He surpasses others in the competitions of active society. Intelligence is very plainly a double qualification. I would divide it into two parts: the inherent brain-ability of the person to think—intelligence, and the acquisitions he has made by thinking—knowledge. Ability to think is by far the most important, and whatever tends to improve or lower this qualification of the person tends to raise or lower his amount of knowledge, and his chances for success in the world. The person with a high order of brain capacity can and does acquire knowledge as the occasion requires. By intelligence, therefore, I mean capacity to think and knowledge combined.

In the slow and gradual advance of man, through generations, from a savage condition to a highly civilized one, it is the gradually increasing necessities occasioned by the competitions of a more and more complex society, that force him, in order to avoid suppression and elimination, to steadily improve his brain ability to think. The elimination of those least fit in brain capacity, and the survival of the more fit, is the natural method of gradual improvement in humanity. The original source of improved capacity and of accumulated knowledge, that is, of intelligence in the world, is therefore competitive life, and it is very easy to trace back all varieties of intellectual ability to the gradually acquired brain capacity that has been the result of the struggles for existence and for ascendency, carried into the more and more complex and refined methods and habits of advanced society.

As society advances, we notice that not only is there an advance in intellectual qualifications—in ability to think—but almost *pari passu* with this line of capacity, there also is acquired another habit of thought, namely, an ethical sense.

As soon as human society begins to grow complex, then arises the public necessity that the competitions of its membership shall be regulated. Families, communities and races soon become themselves aggregated into wholes, individualized, because they become competitors with other families, communities and races, and public good demands that the internal rivalries of their members shall be so harmonized and so adjusted to each other as to subserve general welfare. Public safety demands ethical observances, and a large proportion of the efforts and powers of society are spent in the inculcation of rules of conduct that relate to public good; in this the rules, laws and government of society, with the moral sentiment and public opinion that back them, as men become intelligent, become of a higher and higher grade, until those that harmonize and adjust the associations and competitions of the most advanced society are reached.

For these reasons the individual member of advancing society, besides becoming by competitive practice more and more capable intellectually, at the same time, becomes more and more habituated in the performance of ethical observances. The habit of adjusting conduct ethically, that is, according to established rules of society and the rights and wishes of others, becomes more and more fixed as a trait of character.

My object in this sort of observation is to draw attention to the fact that the tests by which we grade and classify our fellows—their intellectual and ethical abilities—are the results of the gradual practice and exercise to which men have been submitted through generations on generations of advancing, developing existence.

A most advanced man, therefore, is he who has such intellectual ability to think, that he can so understand the complexities of advanced society as to be able to formulate and promulgate the highest and best rules of conduct, and has such an ethical habit inherent in him that he holds true by an educated conscience in the observance of them.

The highest type of man, in short, is he who has the highest intellectual sense, coupled with the highest ethical sense.

Brain strength, like muscle strength, is the result of previous practice and exercise. All-round ability is the result of all-round work, and specialized accomplishments are the results of special kinds of practice. In brain-work, as in muscle-work, the exercise, in order to be improving, must reach the degree of being effort. Unless there is a constant sense of effort in muscle-work, muscle strength does not improve; the same is the case in brain-work. Brain work is therefore necessary in order to continue brain capacity; and in order to raise the level of capacity, increased effort is necessary. Previous activity alone produces capacity; continued activity alone continues capacity; and increased activity alone increases capacity.

The previous activity that produces capacity is either ancestral or individual. In biological descent the individual only represents one link in a chain of activity. The person gets his ability from the line of his ancestry—receives it at a certain level, and maintains or raises it solely by his own activity. Heredity means no more than the continuance in the line of the habits of action established in the ancestor. Of the two

elements of intelligence which I have mentioned, viz.: capacity to think and knowledge, capacity is inherited, knowledge is not. Knowledge has to be acquired, but by far the greater part and the best part of the capacity is inherited from ancestry, and is the result of previous ancestral brain exercise.

Brain abilities are not constant qualities; they vary in the life of the person and in the line of descent according to habits of thought. Practice alone produces; practice alone continues; and increased practice alone increases brain abilities.

According to these rules, our high-grade intellectual person is the result of previous ancestral and individual intellectual practice, and is, at the same time, ethical to a high degree, because of high-grade ancestral and individual ethical practice. The highest type of man, the one highly intelligent and highly ethical, is solely the result of the practice of both these kinds of brain work, and can occur only in that sort of advanced society which has been active and industrious, so as to have necessitated brain activity on the part of its members, and in that sort of society where the study and observance of high ethical rules are a constant practice.

No community, no matter how civilized, is uniform in its membership; we can find low types of men everywhere. In the most advanced society its membership will grade from the highest type — highly intelligent and highly ethical, to the lowest — very ignorant and very immoral. Brain abilities are not constant qualities. There is no constant level of capacity; it rises and falls according as the brain is practiced or not practiced.

While, therefore, we may state that activity improves capacity, we can with equal accuracy assert that inactivity lowers capacity. Much — probably most—of the impaired or lowered brain capacity in society comes from brain idleness. Functional capacity begins at once to lapse if functional brain activity is abated. We witness this on all sides: whatever conditions, due to wealth or poverty, conduce to lessen functional brain work, tend to impair intellectual capacity to think, and the ethical sense to do right. In the idle wealthy ranks and in the idle poor ranks we find most degeneracy. The active, industrious middle class carry the main current of improvement. Improvement is only found where there is activity, and degeneracy is always an accompaniment to idleness. Society sloughs off at its two inactive idle extremes. If you study the conditions that lead to brain work on the one hand, and those that lead to a cessation from brain work on the other, you have much of the secret of improvement and of degeneracy, in the individual, in the family, in the community, and in the nation. There is in this way a very ready, because a very physiological, explanation of much that otherwise is strange and difficult to understand. Families lapse from wealthy positions into poverty in the course of one or two generations, because the necessities for brain work having been removed, degeneracy comes with the condition of inactivity. Races and nations readily follow the same course. A very large proportion of the incompetent and the vicious elements of society is made up of the lapsed members—of those whose lines of capacity point downward. Almost every family can be said to be tending towards survival or towards elimination, and the cause of their tendency can be readily learned by observing whether their brain habits are active or inactive.

The competitions of active, industrious society determine the levels of its members. The incompetent poor classes become poorer, occupy unfavorable and unhealthy positions, and eliminate rapidly; while wealth induces idleness and degeneracy, and consequent inability to add to, or to even hold to the property that parental or ancestral capacity may have provided; in time the rich disappear, or "the top rail goes to the bottom," to be eliminated in the poor ranks. In our rapidly changing American society, it is very common to find in the second or third generation the relics of once wealthy families, unable now to compete successfully for a living because of degeneracy in intellectual ability, and with ethical habits alongside the very lowest.

I have probably said enough to warrant the statement that brain activity alone induces brain capacity, and that brain inactivity induces brain incapacity.

In this observation, we notice that there is only one way of improving capacity, namely, by activity; but when we turn to the converse proposition, we recognize there are several ways of lowering it. Inactivity, I have said, induces most of the incompetency, but it does not produce all. It does it by impairing the brain's ability; but the brain's ability is also lowered by whatever else, in any other way, impairs or injures its structure. Functional capacity depends upon structural integrity. Any defect, injury or disease of the brain lowers its capacity; and we judge the pathological disability by the same tests that we use in grading physiological disability; that is, we witness there is always more or less impairment in intellectual and ethical capacities in brains pathologically impaired. In all our insane asylums we find persons who once were graded high in intellectual and ethical abilities, now sadly lowered in both these qualifications. We estimate the insane by the same tests we estimate the sane. In a large majority of cases the decision is easily made. It is only in those cases when the insane degree of disability is not yet quite reached, but is approaching,

and it is necessary to anticipate it, and in those cases when the disability is transient and questionable, that the expert is required.

The methods of brain degeneracy I have thus far mentioned are, foremost and principally, brain idleness, and next, those pathological conditions which are the results of disease, injury or defect; but there are other causes at work in society, by some not recognized or classed as pathological, which question I won't stop to discuss; and these causes, in my opinion, are very potent — probably, next to brain idleness, the most potent in modern brain degeneracy. I allude to the widespread and abundant use of brain drugs, the principal one of which is alcohol. Next to brain inactivity, I believe brain injury with drugs, especially alcohol, produces most modern brain degeneracy. In proportion as the amount of alcohol in the circulation is increased, in addition to a lessening of sensibility, we witness a gradual lessening of intellectual ability. This declines through descending stages from the condition in which we describe the person as a "little off," intellectual capacity slightly lowered, judgment and accuracy of thought slightly defective, to that condition where there is entire loss, and the man is a temporary dement.

In proportion, too, to the amount of alcohol taken, we witness ethical ability to be lowered, and the cerebral disability in this particular will be exhibited in descending stages, reaching from slight loss of the sense of propriety and decorum to that condition in which the person is such a nuisance, or is so degenerous to his associates, that he reaches the degree of temporary mania, and has to be restrained.

These effects of alcohol upon the brain will vary in different persons. Callous brains exhibit impairment to a degree than more sensitive ones; low grade brains reach the savage level sooner than highly advanced ones, and defective, injured or diseased brains exhibit their failures in the lines of their deficiences.

The length of time, also, that the alcohol use is continued increases the degree of disability. A single debauch can be readily recovered from, but long-continued use leaves such impairment that only in rare cases does complete recovery ensue.

Sometimes we have these conditions all supervene in the same person; that is, we have a considerable quantity taken by a brain already weak or defective, and the drinking is continued a long time. This is the case with the majority of those whom we call inebriates. In a majority of cases the brain of the inebriate is originally low-grade, and nothing could be done to more effectually lower its capacity still further. But it matters not whether there is original weakness or not, a sufficient quantity, long continued, will bring down, in intellectual and ethical capacity, the most advanced brain to the level of the lowest. Whenever an idle, incompetent brain is rendered still more incompetent by the chemical effect of a drug, degeneracy and the consequent elimination of the person and his lines of descent is rapid indeed; and this happens not nearly so much by the injury to other structures and organs of the body, so as to induce death directly, but, because the injury to the brain places the person, by his loss of intellectual and ethical capacity, in unfavorable, poor and vicious surroundings and indirectly causes the elimination of himself and his line.

Brain injury with drugs produces a great deal of modern brain degeneracy, and, in connection with brain idleness, is an exceedingly rapid eliminator in society. The popular and indiscreet use of alcohol, nicotine, opium, and similar drugs, is a very potent factor in modern degeneracy.

The application of the above principles to the explanation, on the one hand, of success and survival, and on the other, of failure and elimination, is very interesting.

We are very apt to lose sight of the rapid rate of human elimination. What is a possible or normal rate of increase is never reached by any people; causes of elimination are constantly at work to keep the increase below the normal rate. If every human female who is born reached adult life, and bore a reasonable number of children, directly, there would not be standing-room in the world. The grade of brain ability, as I have said, is the factor that, more than anything else, determines a person's position in the world; and a physiological consideration of the causes that lead to increase or decrease of these faculties is seldom heard; yet it is a most rational way of dealing with the subject.

Before I close, I think it will prove interesting if I apply some of the physiological principles I have been enumerating to a broader field, and as briefly as possible show how the rise and fall of races run on the same principles that individuals rise and fall in society.

A race is an aggregate of similar individuals —or, more properly, of similar lines of descent. What determines the grade of a race is the level of the aggregate capacity of these lines. The centre of the aggregate potentiality of the race, in the progress of its social dynamics upwards or downwards, varies as an individual's; with, of course, less sudden variations, because of the overlapping of generations—still it never, or seldom long, remains at the same level. Just as much as with the individual, it takes continuous activity to keep up capacity in the race, and inactivity lowers capacity.

We often hear it stated that a race or nation degenerated because they forgot the instructions or accumulated experiences of their forefathers.

The forgetting or the not heeding had very little to do with it. The records of the accumulated experiences of a race's previous history are always abundant, and the alarmed, but gradually thinning ranks of their leaders are continually proclaiming and preaching and teaching them; but the secret of their gradual decline in prestige and power, and comparative influence among other races, lies, as is often the case with the individual in society, in gradual abatement and stopping of previous brain industry and activity. An active race soon reaches a stage of comparative excellence and wealth and power, so as to be relieved of the immediate competitive necessity for continued exertion. When this is the case, it is just as much "human nature" in the aggregate of individuals, as in the single individual, to stop further exertion and exercise.

The ancient Semitic races, who once inhabited western Asia and ancient Egypt, and who long antedated the Aryans of Europe in civilization, grew powerful first and then rich, stopped activity and declined in excellence.

It matters not whether you locate the origin of the Aryan races in the centre of Asia or in central Europe, as is more recently advocated; when first known, they were an active, combative, competitive people in Europe, considered by the ancient Assyrians, Phonicians and Egyptians as barbarous and semi-civilized. Those Aryans who occupied the peninsulas of ancient Greece and Italy, caught up first the civilizations of Asia and Egypt, because they were nearest to them. An active, progressive, advancing race, like the individual, is acquisitive of knowledge as well as wealth. They learned from their advanced neighbors, and by activity themselves became powerful in knowledge and resources; then conquered and plundered the old Semitics, and rose to be the excellent and leading races of Greece and Rome. Greece, the one nearest to the Semitics, improved first and declined first.

In time, the same physiological processes took place with the people of Greece and Rome. They waxed comparatively excellent, the necessity for further exertion was relieved, and they turned the pinnacle of excellence and began the decline of the other side because of brain degeneracy—not because they had not the accumulated wisdom and wealth of the world, but because the aggregate of their brain capacity lowered in level for the want of the continued brain practice and exercise necessary to keep them up. The aggregate capacity of the nation to think and to act ethically declined.

Defended by the mountains to the north of them from their kindred Aryan races of central Europe, and having thoroughly demolished the races south of them, the Empire of Greece, and of Rome particularly, had abundant time of idleness and inaction to become thoroughly degenerate; so, when the hordes from the north poured over the mountains, these empires sank easily. The darkness that followed the submergence of these ancient civilizations, was for a time so complete and dense, because the Goths and Vandals were themselves not able to appreciate and appropriate the civilizations that they destroyed. They conquered Rome too soon, before they were themselves ready for it. "The dark ages" were the result; and if it had not been for the Arabs in Alexandria, who worked round the coast of North Africa, and into Spain, keeping up the lamp of civilization, with the help of the Jews and Greeks they imported to teach them, the light of civilization would have been almost totally submerged. The Moors of Spain took eventually the same old routine course, before the gradually improving Aryans of central Europe; in their turn became rich, inactive, and disappeared.

Those Aryan nations of Europe who to-day hold their positions of highest excellence in the world, have solely reached their eminence by their improved brain abilities—the result of generations on generations of advancing brain practice.

A semi-civilized king of Asia or North Africa may think in his visit to London, if he had all the wealth and vast material resources of England transported to his country, his would be a nation equally as great. Nothing is more mistaken. The only way for his people to reach the proud eminence of excellence of the British Islanders, is for them to have gone through the same long processes of industrious, persevering, high-ordered brain practice, similar to that through which these people have passed. It is the work of generations, and cannot be donated in a day.

In this connection, it is interesting to notice to what degrees and at what levels the different savage, barbarous, semi-civilized races of the world have appropriated the civilization of Europe, as it has, in the intercommunication of modern commerce and travel, and by teachers, been conveyed to them. There are hundreds of illustrations in the world of the fact, that a low grade race accepts and runs advanced civilization just at the level of their inherent ability. A singular observation, connected with this fact—often some test of competitive ability, in war for instance—is necessary to show the superiority of the advanced race to the inferior one, so as to make it ready to appreciate and learn.

The inhabitants of the Pacific and Indian Ocean Islands are good illustrations of these principles. Those inhabitants, who by ethnological tests show themselves to be descendants of the more advanced races of Eastern Asia, have appropriated civilization at more rapid rates than those types similar to the races of Southern

Asia and Africa. At one extreme, we may mentian the notable examples of the Sandwich Islanders and the Hoovas of Madagascar, both of Eastern Asia types; and at the other extreme, the Andaman Islanders and the inhabitants of Tasmania and New Zealand, of African type. Of the Eastern Asiatics, the Japanese exhibit, in all particulars, more activity, and consequently more progressiveness, than tne Chinese, the Malays or Burmah races. The ancient civilizations of these races were among the first in the world, but, in the case of the Chinese particularly, the rigidity of too crowded a population suppresses improving activity.

I could take the range of the world to illustrate these principles, but have not the time. It may prove more instructive to come closer home.

In America we have three very distinct types of men—the Indians, the Africans and the European whites.

It is a remarkable fact, low-grade races melt away and disappear in the presence of the more advanced ones. In modern times they are not exterminated by war; very few are killed out; still, they rapidly disappear. Whole tribes contiguous to the English and European colonies in Africa have disappeared, and in Australia they are melting away like our Indians. The last Tasmanian has been said recently to have died, and the English government, out of sympathy, has recently been gathering together the few natives of New Zealand as ethnological curiosities.

When an advanced race, as the Europeans in America, for instance, occupy the country of a low-grade race, and attempted to force them to assume the methods of civilization, the change of the brain habits of thought is too sudden for the inferior race to assume. In civilized society, as I have shown, persons of low intellectual and ethical abilities occupy the eliminating grades. To force an inferior people, never practiced or trained in the habits of industrial competitive thought, into the ranks of a civilized race, is equivalent to forcing them into the eliminating grade of that society. The Indians have nowhere been able to enter into industrial competitive life with the Europeans and survive, but, wherever it is attempted, they simply assume the position they are capable of taking; in common language, they become poor and vicious, and are eliminated along with the eliminating whites. The vice of civilized society, to which they take with avidity, is alcohol drinking; and nothing contributes more rapidly to increase their incompetency and viciousness. As with low-grade individuals in advanced society, alcohol is a most rapid eliminator of low-grade races. The general government, in its management of the Indians, finds it has to prevent their access to alcohol, and the missionary among them, in his endeavors to arrest the current of their downward degeneracy, finds his efforts futile, if drink is allowed. The elimination of the Indian races is due principally to these causes; first, it is impossible for the Indian to assume so suddenly the habits of civilized thought which are necessary in order to prevent elimination. For the same reasons the hyena and eagle in confinement become unprolific and defective in descent, so does the Indian; and he often adds rapidly to his degeneracy by drink habits.

When the Spaniards discovered America, they set out at once to enslaving the Indians. They did this first on a large scale in the West Indies, by the hundreds of thousands. The sudden change of brain habits was so severe and extreme that these races exterminated excessively. To-day there is hardly a relic to be found. They proved so unsuitable for slaves, the Spaniards had soon to import Africans.

The Africans, from the remotest antiquity, have been preyed upon by other races for slaves. From the eastern side of the continent, next to Asia, they have been raided most, and are still so to day. On the west coast, whence America received her slaves, they had been before that for thousands of years unmolested and least mixed with Asiatics. They had, among themselves, varied to some extent into grades, according to activity, climate and surroundings. The lowest types of men in the world were found among them, while some were somewhat advanced. The characteristic that rendered them suitable for slaves was, they were passive in disposition, and would bear pressure and moulding. After African slavery had begun in the West Indies, it was soon extended to the continent.

The two hundred years that slavery continued in the United States under its extreme artificial conditions, it exerted powerful modifying influences upon both the Africans and their European masters.

The Africans, for four or five generations, underwent forcible practice in very much more advanced brain activity than they ever performed before. The African, originally, with very moderate exceptions an abject savage, was rapidly made to assume the language, dress, customs and conventionalities of the whites, and practice their habits of thought as far as he was able to understand and imitate them. Each one may be said to have had a private tutor of his own. It is true, the master's interests directed and largely controlled their brain practice; selfishly, in many cases, he directed his slave's habits and labors; still, involved in all such work, was brain exercise of a higher order than the African ever practiced before. His muscles were exercised, his food directed, and his improved sanitary condition brought his average general health to a higher level. At the time of their emancipation

there could not, in my opinion, have been found in the world six millions of people, in a body, to excel the American slaves in three essential particulars—general healthfulness, prolificness, and sobriety. These excellences were the results of two or three hundred years of artificial selection and improvement. In brain work, higher intellectual and ethical practice and instruction was the result of simple association with the whites, as well as the result of direct efforts on the part of the whites to improve them. The selfish interests of the whites dictated, probably, most of their efforts; still, some were incited by the highest altruistic motives. Upon the whole, the American negro emerged from slavery improved above his original grade in intellectual and ethical capacities; and his was an example of more rapid advancement than has ever been witnessed before in such a type of people in such numbers.

The national processes of improvement by activity, and of deterioration by inactivity, had obtained to some extent among the tribes of Africa, which made slight variations in the types imported as slaves, and probably still hold in the grades among them; but the artificial and forcible influences which obtained all during slavery, by training, association and education, and are still continuing, in the efforts made to improve and govern them, together with miscegenation, have tended to advance some few lines toward comparative ability to compete, and toward continuance and survival; but the large majority are taking their natural level in the eliminating grades of society, and prove an incubus upon the country's progress. The race is certainly letting down in the three particulars in which they excelled—of healthfulness of system, of prolificness, and of sobriety. Among those, braced up by, and floating along with, the currents of activity established and maintained by the whites, most examples of improvement are found. But in these sections, where they are in large majorities, and left to their own exertions, intellectual and ethical deterioration is very apparent. Statistics show very rapid elimination of them in the towns and cities, where competitions with the whites force them into most unfavorable surroundings.

That the negro, in the South, is seen to fill the prisons, the police courts and the penitentiaries is an exhibition of a natural condition; he is living under a civilization and a code of laws that he is not able himself to formulate or maintain. He fails ethically, as well as intellectually, in larger proportions than the whites, because he is not as capable in maintenance of the kind of activity his surroundings demand. But I have not the time to pursue this question further.

It is only necessary, generally, in the case of the European whites in this country, to apply these principles, to have ready solutions of the changes going on in our different communities and in our national society. The wholesale importation of the degenerating classes of the old world is having a most deteriorating influence upon our national, intellectual and ethical level. As the good of society feels the fluctuations in the ethical currents first and most, we can see the deterioration, even in high places, due to this influence. Brains degenerated in capabilities, by the rigidity of the strata in European society, which prevents all kinds of activity, except muscle drudgery, are filling our land faster than the three or four generations necessary to elevate them can counteract. We have not yet invented a cerebral dynamometer by which we can quickly test a man's intellectual ability and his ethical strength. Such a test, however, is sadly needed. Persons who fall below a certain level in these two essential qualifications ought not to be allowed to enter the country, no matter whether they hail from Europe, Asia or Africa.

In conclusion, I insist I have been on purely physiological and professional ground all the way in this discussion. The corrollaries I would draw from it are:

1. Brain capacity is solely the result of ancestral and individual brain practice.

2. The test of these qualifications are the grades of intellectual and ethical abilities, usually determined by the level the individual, the family or the race occupies in competitive life.

3. Degeneracies of brain ability are occasioned by brain inactivity, which is the principal method of deterioration; but whatever injures the brain structure impairs intellectual and ethical ability, whether it be traumatism, disease or defect, or abuse with drugs.

4. A great field for the highest order of public sanitation is open in this direction, heretofore almost wholly unoccupied by our profession.

In discussion Dr. Herdman, of Michigan, said:

I, for one, feel like congratulating the members of the Section upon the privilege of listening to such a philosophical paper as has just been read. It seems to me to have presented topics eminently appropriate for consideration by this Section. It is a deplorable fact, disheartening oftentimes to the neurologist and alienist, that many of the diseases with which he has to deal in his daily practice are, in the individual, incurable; but little can be done for them in one generation. The causes and influences that have been at work in bringing about the pathological change are inherited from the ancestor; are the fruit of bad social customs, of imperfect methods of education.

The work of the neurologist, therefore, as a student of brain deterioration, carries him beyond

the immediate to a study of remote causes, which are the chief factors oftentimes in producing the result in the individual he is called upon to treat. Upon us rests the responsibility of pointing out these far-reaching influences, and herein is the most encouraging field for the exercise of our talents as promoters of the welfare of humanity.

It is true, as has been clearly set forth in the paper, that man, in his evolution to the point of greatest efficiency, can only attain that end by healthful exercise of every faculty. Man's constitution is a trinity composed of *physical*, *mental* and *moral* faculties. The perfect man is the product of these three acting harmoniously and carried to the degree of their highest possible development. They constitute a tripod on which the superstructure, when symmetrically built, rests securely. And in the process of development toward the perfect man no one of the three pillars, upon which the final result depends, can be ignored. To neglect the physical, the mental or the moral faculties of his nature; to cultivate one at the expense of the other; to fail to observe the interdependence of the one upon the other, will produce a greater or less degree of deformity, and not the perfect man. The central nervous system is the organism upon which the development of these faculties depends, and by means of which they find expression. The growth of the normal structure and function go hand in hand. What then, we should ask ourselves, are the causes, the influences at work in the race and in society; what are the conditions necessary for obtaining perfection in the harmonious development of man's threefold nature?

These are legitimate subjects for the thoughtful consideration and research of every physician who attempts to enlighten his fellow-man as to the laws to which his nature is subjected, and the forces that affect his well-being in its entirety. And such responsibility rests upon the neurologist and alienist, perhaps to a greater degree than upon any other class of practitioners of the healing art. In him do we expect to find a storehouse of all truth, so far as discovered, which has a bearing upon the evolution or dissolution of man's brain. What then is the value of the discussion of this or that agent in the pharmacopœia in some particular disease, as compared with a study of these principles, which underlie an entire class of pathological conditions?

There is at the present time a strong conviction among neurologists, which is shared by others in the medical profession and by thoughtful men and women among the laity as well, that the man addicted to the use of alcohol in excess is a sufferer from disease; that his brain has undergone functional, if not structural, change, which renders him as incapable of self-control as the idiotic or the insane, and that this condition of irresponsibility is not confined alone to those times when his blood is saturated with alcohol from recent indulgence or debauch—but that during the intervals of drunkenness he is incapable of acting as a sane man, and should therefore be dealt with, not as a criminal to be turned over to the police only in some fit of bacchanalian excess, but is at all times, until pronounced cured by competent judges, a fit subject for the hospital or the asylum.

This and other social problems of no less import and wide-reaching applications, come within the legitimate range of our purpose; are rather the most vital questions for discussion by the members of this Section, and the paper which has just been read points out the road along which, as a company of specialists, we can do the greatest good to our fellow-men.

Dr. Hughes said he desired to express his appreciation of the worth and excellence of the paper. He was glad to see papers of this kind brought before the Section. Formerly physiological psychology was a subject that emptied the room, but this to a great extent had been changed by Maudsley and Spencer. These writers had attracted general medical attention. Papers of this kind will do much to settle psychical hygiene for both the individual and society.

THE VIRILE AND OTHER NERVOUS REFLEXES.

Read before the Section of Medical Jurisprudence and Neurology, at the Forty-second Annual Meeting of the American Medical Association, held at Washington, D. C., May, 1891.

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In a previous communication on this subject (*vide Alienist and Neurologist* for January, 1891), I have called attention to the fact that in a perfectly healthy individual, whose spinal cord is entirely normal, especially in its genito-spinal center, placed supine on a couch without headrest, nude about the loins, the sheath of the penis made tense by clasping the foreskin with the left index finger and thumb at about the place of the frænum, and pulling it firmly toward the umbilicus, placing the middle, ring and little finger low down upon the dorsum of the virile organ, the dorsum or sides of the penis, near the perineal extremity, then sharply precussed, a quick and very sensible reflex motor response or retraction of the bulbo-cavernous portion will be felt to result from this sudden percussional impression, like that which follows, though less pronounced, in the testicles, after sensory irritation of the inner aspect of the thighs, and known as the cremasteric reflex, with this difference only, the cremasteric reflex is a sudden upward movement of the testicle of the side irritated,

while the virile reflex is a sudden downward jerk. While this reflex, like all reflexes with which I am familiar, is away from the irritating afferent impression, it is in marked contrast with the patellar tendon phenomenon in being away from the heart instead of toward it, as so many reflex movements are. It differs from the ordinary penile erection, and must not be mistaken for it (for it cannot properly be called an erection) in this respect, too, viz., that it is downward, and not upward, and proceeds always from a peripheral and external irritation; whereas, erections more often proceed from direct central (cerebral) impression proceeding downward and outward.

Its action corresponds to the œsophageal reflex, or reflex for swallowing.

This reflex symptom is of important clinical and physiological significance, as will later on be shown.

I have called it the virile reflex, because I think, if properly sought for, it will be actively present in all healthy adult males with normal spinal cords; at least, I have so found it in all. It is absent in infants, and feeble or absent in male children who have not attained the age of puberty.

A number of years ago I ventured the assertion that the absence of the cremasteric reflex would be found of significance in the determination of impaired virility from sexual excess or masturbation. This, subsequent experience has only confirmed. Now this new sign—the virile, the penis percussion reflex, or, as M. Ounanoff calls it, the bulbo cavernous reflex—present, impaired or absent, gives us another valuable evidence of the vigor, impairment, loss or abeyance of the sexual powers in man.

After prolonged excessive venery it becomes impaired or disappears, to return again with sexual recuperation.

After excessive masturbation, long continued, with accompanying neurasthenia, I have found it impaired, but seldom entirely absent in young subjects. It is not impaired in masturbation when the habit has destroyed the sexual power. It disappears in some cases of chronic meconism, and becomes abeyant in long and beastly intoxication, though often excitable in acute alcoholism. This subject needs further investigation.

It is lowered and abeyant in the later stages of typhoid fever, and I have found it also in the moribund state. I have found it absent in old men who have acknowledged and sought treatment for entire virile incapacity.

It is often, but by no means uniformly, found in sympathy with the other reflexes in spinal cord disease of the lumbo-dorsal spine, as the quadriceps extensor femoris tendon reflex, the anal, vesical and cremasteric reflex, the Achilles reflex, ankle clonus, etc.

This phenomenon may also be elicited by suddenly jerking the foreskin after it has been made tense, or by pinching the theca of the penis when it is in this stretched condition. This reflex may be reinforced like the knee phenomenon, but by a different process, viz., the frictional excitation of the glans and body of the organ by means of a brush, or brushing it briskly with a piece of paper. It may also be evoked by electrical excitation, a kind of clonus sometimes appearing after this form of irritation. As I said in my first communication, some skill in palpation — a sort of tactus eruditus — is necessary in examining for this sign, the characteristic jerking back of the bulbous urethra within the sheath of the penis being felt only when carefully sought for. It is not ordinarily to be seen.

I have found the sign absent in cases like the following: Pupils unequal, patellar reflex exaggerated, and other evidences of sclerose in plaques, with history of syphilis, and acknowledged feeble virility, and diagnosis by a competent ophthalmologist of optic atrophy. I believe it will be found to be quite generally absent when there is optic atrophy, unequal pupils, and other evidences of cerebral sclerosis, or multiple cerebro-spinal disease of this nature. I have found this sign absent in the status epilepticus, but not necessarily modified in hemiplegia, and exaggerated in cerebral paraplegia.

The following clinical records, made since my first report on this subject, add additional confirmation to the significance of this sign:

Case 1.—Mr. J. B., aged 23, single, locomotive fireman, first presented himself for treatment at my office July 11, 1891, when I obtained the following history: Some three years ago, in alighting from his locomotive running at the rate of 15 miles an hour, he sprained his back, but it did not give him much trouble at that time. About three weeks ago, while perspiring freely, he "caught cold" and the perspiration suddenly stopped—from this patient refers present trouble, though he had an attack of la grippe in February, and about latter part of April, he noticed impairment of motion of right leg. Some four years ago he indulged in sexual intercourse to excess—upon one occasion, had connection seven times in twenty-four hours. He has had no inclination for sexual intercourse lately, thinks he has had sexual desire but about a half dozen times during the past two years.

Bowels constipated, for which he resorts frequently to purgatives. Had an attack of vertigo to-day, and fell to the floor while in the act of yawning. Pulse (sitting) 66; upon slight exertion (walking about the room), pulse increases to 78. Right knee-jerk abnormal; R. quadriceps clonus marked up to origin of muscles—a slight tap below right patella (not sufficient to produce patellar reflex), will cause quadriceps muscle to vibrate. R. knee response below normal, left

knee-jerk impaired, no quadriceps clonus. R. gastrocnemius reflex normal; R. plantar and solar reflexes exaggerated, and clonus follows reflex excitation; plantar surface of right foot hyperæsthetic. Flexion of right foot incomplete one-half, rotation impaired one-half, flexion and extension impaired about one-half. While sitting, he can only lift right leg and thigh about three-fourths as compared to left. Has head and back ache. No spinal tenderness, tender over crest of right ilium and beneath ribs of right side.

Æsthesiometric tests of finger tips give normal results. Numbness of left great toe, but no abnormal æsthesiometric sign. Has slight right scrotal hernia; has phimosis.

Virile reflex impaired, extremely feeble, and elicited with difficulty. Patient put upon the following treatment:

℞ Quinia bisulphatis, drachm ij.
Ext. nucis vomicæ, gr. xij.
Ergotine, scrup., ij.
Ext. belladonnæ,
Aloin (Merck), āā gr. iij.
Liq. potass. arsenitis, gtt. xv.
Misce, et fiat cap., No. xxxvj.
Sig. One three times a day.

℞ Sodii bromidi, oz. iss.
Aq. menth. pip., q. s. ad. oz. vj.
Misce, solve, et Sig. Tablespoonful at night.

Patient reported some three times at intervals of a week, and a marked improvement was observed. He then left on a trip, to return unless the improvement continued uninterruptedly, and I have not heard from him since.

Case 2.—Mr. Chas. E. H., 21, occupation farmer, single, applied at my office for treatment August 15, 1891, and gave the following history: About a year ago, he slept on the damp ground for five successive nights, each morning he felt stiff, and head was very sore. As the effect of this, he was sick in bed with fever for a week or more, legs were paralyzed, bowels constipated, and urine retained — was catheterized several times. He was attended by two local physicians. Says he suffered severe pain during first three weeks of illness, and was troubled with erections. Patient's present condition is as follows: Pulse 90 (patient sitting) and full, temp. 100° Fah., appetite and digestion good, and sleeps well; no erections at present. Some pain in lumbar and sacral region. Crosses right leg over the left with difficulty, cannot lift leg without the assistance of hands, cannot stand alone. Patellar tendon reflex is absent, virile reflex present, but impaired, cremasteric reflex normal, and has abdominal reflex. Has never had syphilis, or any zymotic disease.

Patient placed upon the following treatment:

℞ Quiniæ bisulphatis, drachm ij.
Ext. nucis vomicæ, gr. vj.
Ext. ergotæ, gr xxiv.
Fowler's sol., gtt. xl.

Misce. Tiat. cap. No. xxiv. Sig. Take 2 capsules three times a day—in the morning, after dinner, and at bedtime.

℞ Sodii bromidi, oz. iss.
Kalii iodidi, oz. ss.
Syr. Hypophos. comp. (Fellows'), oz. iv.
Liq. pot. arsen., dr. j.
Aq. menth. pip., ad., oz. vj.
Misce. Solve, et Sig. Teaspoonful in the morning and 2 teaspoonfuls in the evening.

I select and epitomize a few cases from my earlier records as follows:

The first three were middle aged, of these, the first was married, and gave a history of syphilis, brewer by occupation, erections feeble, white atrophy of retina, unequal pupils—left larger than right, vision obscure in both eyes, cerebro-spinal sclerosis (multiple and lateral).

The second gave a history of former syphilis, though at time of observation he was in good flesh and general health excellent, miller and merchant, lives in country; impotent—seldom has erections, but at times has good erections and completes the sexual act.

The third is impotent, fails to have erections.

The next two are children under twelve years of age; of these, the first is a country boy and has epilepsia mitior, the second, also a country boy, has epilepsia gravior.

Another case was that of a civil engineer, single, aged about 28, with nocturnal epilepsia from excessive masturbation.

Additional experience since the discovery of this important diagnostic sign only confirms the conviction uttered in my first paper, viz.: It should receive further consideration at the hands of neurological clinicians, for it appears worthy a place in clinical neurology with Westphal's paradoxical contraction, Erb's reaction of degeneration, or any of the hitherto recognized diagnostic reflexes, or clonuses.

I have found an analogous reflex to this phenomenon in healthy females.

It may be elicited in normally vigorous persons when that condition of the organ is present that we find coëxistant with a desire for coitus, when the sexual act is about to commence, and shortly after coitus, if the sexual desire has not been gratified to satiety. It can be evoked during priaprism, and during penile relaxation, if power for a second coitus remains in the organ.

In conclusion, I think we are on the verge of further most important discovery in the direction of physiological and pathological reflex phenomena, and on the verge of an enlarged comprehension of their value in diagnosis and prognosis. I believe that every part of the body supplied by an afferent (sensory) nerve communicating with a center, whether cerebral, spinal or ganglionic, capable of an efferent or motor response, will be found susceptible under appropriate stimuli (electrical, mechanical, or special) in normal or pathological state, responsive in some way, and that

this plus or minus responsiveness is yet to have far more remarkable value in clinical estimation than is now accorded it or dreamed of in medical minds. For instance, in our clinical investigations, we take into consideration such purely physical reflexes (in addition to the cardiac and visceral movements) as the palpebral, pupillary, naso-pharyngeal, vesical, cremasteric, anal, and the tendon reflexes of the lower and upper extremities, normal and abnormal, and the clonuses which are of the nature of reflex phenomena prolonged into rhythmical movements.

Many of these are more or less influenced by conditions of psychical inhibition.

Then we have in disease often to consider the state of the psycho-physical reflexes, as the involuntary shedding of tears, unintentional, or causeless weeping, involuntary and unsuppressable laughter, shouting, involuntary exclamations of various kinds, as of fear, disgust, joy, etc., and sudden involuntary and unrestrainable psychomotor responses of various kinds, virile erections under erotic psychical impressions. These latter are downward influences, reflex responses from psychical excitation through peripheral impressions transmitted through sight or other senses, or originating altogether in ideational center. Then we have the psychical responses to peripheral impressions, such as the sudden mental states and expressions following physical impressions, like the immediate outcry of peripheral pain—the true nature of a reflex phenomenon wherever we find it being a peripheral impression transformed into an immediate, or almost immediate, motor response or expression.

If we take into consideration how much of our power for regional diagnosis has been aided within the past few years by what we already know of these reflexes, especially of the knee jerk, Achilles reflex, the foot clonus, the anal, vesical, cremasteric, and virile, how much more may we not hope for with confidence, if we but persevere in our search for yet unknown manifestations of these phenomena? I have already elicited in certain moribund states, an oral reflex, as heretofore announced, and a physiological anal reflex; and have confidence even before its announcement, not knowing it was new, much that Rosolimo asserts concerning the reflex of the anal sphincters, this latter reflex serving as an especially valuable differentiating test where sexual failure is to be early distinguished from commencing vesical or rectal paralysis.

A CHEAP DISINFECTANT.—The nitrate of lead is the cheapest disinfectant known that fulfils its intent. It does not, however, prevent putrefaction. The chloride of lead is much more effective in all directions. It is made by dissolving a small teaspoonful of nitrate of lead in a pint of boiling water; then dissolve 2 full teaspoonfuls of common salt in 8 quarts of water. When both are thoroughly dissolved, pour the two mixtures together, and when the sediment has settled you have 2 gallons of clear fluid, which is the saturated solution of the chloride of lead. A pound of nitrate will make several barrels of the liquid. The nitrate of lead costs from 18 to 25 cents a pound at retail.—*Med. Bulletin.*

THE JOURNAL OF BALNEOLOGY.—It is announced that Dr. J. N. Bell, of Brooklyn, Dr. Frank Woodbury, of Philadelphia, and Dr. Geo. H. Rohé, of Baltimore, are to be the editors of this journal, in the departments of balneology, dietetics, and climatology, respectively.

PULMONARY TUBERCULOSIS TREATED BY HYPODERMIC INJECTIONS OF ARISTOL.

On Sept. 15, 1891, M. Herard read before the Paris Academy of Medicine, a report by Dr. Nadaud, upon this subject. An abstract of it is printed, as follows, in *La Semaine Medicale* (No. 46):

After having observed the excellent effects of Aristol upon scrofulo tuberculous lesions, and found that Aristol was perfectly inocuous in internal medication, M. Nadaud decided to make use of hypodermic injections formulated as follows:

Oil of sweet almonds (sterilized) 100 c.cm.
Aristol 1 c.cm.
The solution should be filtered.

Nadaud's first injections were made upon a child, æt. 7 years, who, after an attack of coxalgia, had developed several abscesses followed by fistulous tracts. One cubic centimetre of aristol was injected daily. After twenty-five days of treatment there was no trace of suppuration to be seen.

In consequence of this result, Dr. Nadaud decided to test the value of hypodermic injections of aristol in the treatment of pulmonary tuberculosis.

Twenty-three patients suffering from tuberculous lesions of the lungs were successively treated by injections of aristol without any other medication whatever.

In seven cases the amelioration was so great as to induce the belief that complete cures had been effected. The treatment covered from twenty-five to thirty days. The amelioration has continued up to the time of this writing, *i. e.*, from three to four months.

In five of the twenty-three cases there was a prompt amelioration, but, a month after the cessation of treatment, some symptoms were observed which seemed to call for a second series of injections. Generally, the relapse was of slight importance, and the patients in this category soon resumed their habitual occupations. In no case was it necessary to make a third series of injections.

The rest of the cases are still under aristol treatment.

In concluding his paper, Dr. Nadaud said: The effects of aristol are promptly observed usually on the sixth or seventh day of medication and are first manifested by a diminution of the cough and a suppression of the night sweats.

After twenty or twenty-five days of treatment we generally find that the patient has increased in weight.

Aristol gives its best results in the first and second stages of pulmonary tuberculosis. The injections do not cause inflammation, irritation, abscess, eschar, or induration.

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SATURDAY, NOVEMBER 7, 1891.

TRICHINOSIS TREATED BY FOWLER'S SOLUTION OF ARSENIC.

In the New York *Medical Journal*, September 19, is reported a case of trichinosis treated by FOWLER'S solution of arsenic, with recovery. The reporter is DR. W. H. MERRILL, of Pepperell, Massachusetts, and the patient was an inmate of the Ward's Island Hospital, an Italian immigrant aged twenty-five years. The cause of the disease was believed to be the ingestion of Bologna sausage, which took place about twenty days before the admission to hospital; the partaking of the sausage in this instance, more than any other former ones, was emphasized by the fact that the man was made unwell by it; he had vomiting, diarrhœa, anorexia and gastric pain, also later some hoarseness and cough. At the time of admission, the muscular and articular symptoms strongly favored the diagnosis of trichinosis, which was confirmed on the second day by the harpooning of a muscular specimen from the patient's right biceps. This exhibited an abundant number of trichinæ in their earlier adult form. None of the parasites had progressed to the stage of granular degeneration. A second muscular specimen was obtained one week later, and yielded the same appearances. In spite of tonic treatment, the patient's condition grew steadily worse for a period of ten days, until his condition became decidedly precarious. A myositis of his masseter muscles had sprung up which rendered the reception and swallowing of food extremely difficult. The patient's urine was scanty, but showed no albumen and no sugar. The hot-air bath was used, together with some of the ordinary diuretics, and the quantity of urine passed in twenty-four hours was brought up from fifteen to forty ounces; and that was the average excretion during the remainder of the man's stay in hospital. FOWLER'S solution was given in five-drop doses, to be increased three drops per diem until the constitutional effects declared themselves. For two or three days after this treatment was begun the patient did not improve, and in fact seemed fatally ill; but on the fifth day some slight change for the better was noticed, in the return of appetite and some lessened rigidity of the jaw-muscles; and soon the pulse began to grow stronger. The pain and œdema about the joints then began to subside. The improvement during the next ten days was continuous and fairly rapid. The skin over the abdomen showed striæ, somewhat resembling those seen upon the abdominal integument of a pregnant woman, which extended downward and outward. The cause of these marks was obscure, since the patient had not had any hyperextension of the skin sufficient to account for such striation. The limit to which the dose of FOWLER'S solution was raised was thirty-six minims in twenty-four hours. The dose was intermitted or reduced whenever arsenical symptoms were reached. The author believes that this is the first case on record where arsenic was used for trichinosis, and he shows no inclination to base any far-reaching conclusions on this solitary case. But he publishes the results as being, to all appearances, sufficiently prompt and satisfactory to warrant others in making a trial of arsenic, in default of a knowledge of something better. The author suggests that the good effects of arsenic in his case were due to the germicide properties of the drug, and to the great facility with which FOWLER'S solution diffuses itself through the body. Arsenic not only increases the activity of capillary circulation, but over certain forms of cells exerts a power to compel retrograde metamorphosis. It is possible that some combination of these phases of drug activity may either destroy or abbreviate

the life of the parasite. DR. MERRILL devotes the closing portions of his paper to a rapid survey of the various drug treatments of trichinosis that have been most successful in Germany, where the recorded cases of trichinosis are far in excess of those of any other nation, and he does not find any drug that promises any better results than arsenic. Among the agents that have been tried have been alcohol, glycerine, the picro-nitrate of potassium, and the salts of calcium. FIEDLER has used large doses of glycerine, but experiments made upon dogs which had been fed upon trichinous flesh were found not to be benefited by that drug, even in very large doses. It would be interesting to see a similar line of experiments undertaken with regard to effects of arsenic upon infected animals

THE HEART IN DIPHTHERIA.

It is well occasionally to have our attention directed specifically to an important symptom in a disease, particularly if that symptom be only occasionally manifested. Every practitioner knows well that sudden heart failure is liable to occur in diphtheria, and understands the importance of rest in connection with it, but it is to be feared that this knowledge of the subject is not always followed in practice.

The cardiac complications of diphtheria is the subject of an essay by DR. WM. C. DABNEY, of the University of Virginia (*Va. Med. Monthly*, October, 1891), in which he calls attention to three forms of cardiac disorder, accompanying or following this disease:

1. A rapid and feeble pulse, often irregular in force and rhythm. This is the usual condition during diphtheria, and not infrequently continues after the disappearance of the fever.

2. A feeble pulse, which becomes progressively slower until the beats number less than forty, sometimes less than thirty, to the minute.

3. A sudden failure of the heart when all other alarming symptoms have disappeared.

These two latter conditions should unquestionably be considered together. The one is suspiciously like a paresis; the other is certainly a paralysis. When sudden heart failure is recognized as one of the diphtheritic paralyses, its peculiarities are the more readily understood. While palatal paralysis is the more common form in diphtheria, nevertheless it is well known that any other group of muscles may show the same result, or the paralysis may be general.

The conditions of the throat paralysis may be considered as applying to the cardiac failure as well, frequency alone excepted. The throat paralysis may occur at any period of the disease, but most frequently it is a so called sequel, although recent experiments have shown conclusively that the poison elaborated by the LÖFFLER bacillus may produce it. Similarly, the cardiac paralysis may occur either early or late.

A sore throat, so mild as not to inconvenience the patient at all, and for which no medical relief is sought, is followed by paralysis of the throat, and then for the first time is it realized that the patient has been suffering from diphtheria. Such mild attacks are by no means infrequent, and perhaps their principal lesson is to teach that as one form of paralysis follows such mild cases, so may another form, and that no case of diphtheria is so mild that the heart may be neglected.

The oftener palatal paresis is looked for in diphtheria, the more frequently will it be found. It does not always force itself on the attention by the regurgitation of liquids through the nose, but it is a little surprising to find how many diphtheritics show some nasal twang to the voice. This makes it all the more necessary to watch for the evidences of cardiac failure.

DR. DABNEY does not agree with this view that the slowing of the pulse is an evidence of cardiac paresis, but describes it in the following words: "In many cases which I have seen the earlier symptoms presented no special gravity, but after a week or ten days, when all false membrane had disappeared, the patients seemed to be on the high road to recovery, the pulse, which had been quick and feeble, would gradually become slower without any marked improvement in force. There was a gradual diminution in the frequency of the pulse from day to day—sometimes even from hour to hour—until it fell to forty, or even thirty beats per minute. The only other symptoms noticeable in the case were exhaustion and some degree of restlessness. In no case was there any paralysis of muscles, nor were there any other evidences of multiple neuritis. There was no irregularity of rhythm in the cases as a rule, nor was irregularity in the force of the heart's beat as marked as in the first class of cardiac complications."

The prognosis of the slow and feeble pulse is extremely unfavorable. According to DABNEY it is nearly, if not always, fatal, when the pulse drops as low as forty.

Absolute quiet, both mental and physical, and rest in the recumbent position, are to be regarded as the best prophylactic measures in these conditions.

In the cases of slow and feeble pulse, DABNEY reports that he has used strychnia, atropia, brandy, ammonia, ether, and the other cardiac stimulants and tonics, but without the slightest benefit. It may be suggested that in these cases eliminatives, acting upon the kidneys and skin, such as the alkalies, hot baths, and perhaps even acetanilide or antipyrine might be exhibited. This much is certain—prolonged rest after diphtheria, even if it has been of the mildest type, should be the rule.

OUR GREAT MEN.

The celebrations throughout the world of VIRCHOW'S seventieth birthday, October 13, 1891, were merited honors to the great man who has shed so much lustre on medical science. Medicine delights to honor him, and he is no less pleased with the profession which made his great work possible. At the Johns Hopkins celebration of this event, PROF. OSLER took as the subject of his discourse "RUDOLF VIRCHOW, the Man and the Student." He says: "It has been a century of release—a time of the loosening of bands and bonds; and medicine, too, after a long enslavement, ecclesiastical and philosophical, received its emancipation. Forsaking the tradition of the elders, and scouting the Shibboleth of the schools and sects, she has at last put off the garments of her pride, and with the reed of humility in her hand, sits at the feet of her mistress, the new science."

Truly, no one has contributed more than VIRCHOW to the accomplishment of this result. Quite early in life he demonstrated his independence of thought, and lack of regard for existing forms, merely because they do exist, by taking part in the German students' revolution of 1848, and for his pains was dismissed from the minor positions which he then held in the University of Berlin. Was it good fortune that recalled him, or is it impossible to keep down such men? His famous *Archiv* was started in 1847. With his development of pathological anatomy, and the influence of his work on professional thought, our readers, as physicians, are familiar, but it is not equally well known that his activity in other lines was no less marked than in this. Throughout his whole life he has worked in anthropology, and his contributions to the literature of this science have been numerous and valuable.

DR. OSLER quotes JACOBI, to show his work in archæology: "SCHLIEMANN, by whose modern witchcraft holy old Troy is just leaving its tomb, invited VIRCHOW to aid him in his work of discovery of the buried city. . . . But what has engaged my attention and interest most has been to observe the humanity and indefatigability displayed by the great man in the service of the poor and sick. To read of his constant, practical exertions in behalf of the miserable population of Hissarlik; how he taught the aborigines the efficacy of chamomile and juniper, which grow about them, unnoticed and unused, in great abundance; how a spring he laid open for archæological purposes has been called by them 'the physician's,' and is believed to have beneficial effects; how he was, on leaving the neighborhood, loaded with flowers, the only thing they had and knew would please him, has charmed me intensely. To admire a great man for his professional labors eagerly undertaken and successfully carried out, is a great satisfaction to the scientific observer; to be able to love him, in addition, for his philanthropy and warm-heartedness, is a feast of the soul."

Even these various duties were not sufficient for his active mind, and hence we find that since 1862 he has taken an active part in the work of the German legislature, and for more than twenty years has been an alderman in the Berlin City Council. It need hardly be stated that VIRCHOW, with his liberalizing scientific training has been opposed to the absolutism of BISMARCK.

It is given to but few to rival VIRCHOW as he rivaled GOETHE, in scientific work, but another form of greatness, no less to be admired, can be reached by the many, a form of greatness not absent from VIRCHOW.

FOTHERGILL says of his friend, DR. ALEXANDER RUSSELL, who settled in Aleppo: "The Pacha himself became acquainted with the merit of our deceased friend, consulted him, called

him, his friend, found him upright, sensible and sincere; as a man polite without flattery; decent but not servile; as a Christian, true to his principles; disinterested and generous as a Briton; and in point of skill as a physician superior to every one. A natural, even, cool and consistent temper, a freedom of behavior as remote from confidence as from restraint, improved by reading and conversation; a mind imbued with just reverence to God, and impressed with a sense of the duty we owe; an understanding fraught with the principles of the profession to which he had been early devoted, happily blended with great benevolence, was a character seldom to be met with in the Asiatic regions. This, however, was the character of our colleague."

EDITORIAL NOTES.

GROSS-VIRCHOW.—Soon after the return of Dr. S. D. Gross from his visit to England, where had been conferred upon him the degree of D.C.L. by the Oxford University, it was our pleasure to congratulate him as being the recipient of so many distinguished honors, and that this last seemed a fitting crown and recognition of a long and successful professional career. His reply was: Would you know the highest and most gratefully received compliment ever bestowed upon me? It was when I first visited Virchow's clinic: Virchow was at the time lecturing to the class. An attendant took in my card. Virchow looked at it and hastened to the door where he greeted me, and bringing me forward with both my hands clasped in his, introduced me to his class as the Father of Pathology, and author of the first work ever printed on that subject, and of which he paid me a most profound compliment. I tell you that was one of the proudest moments of my life.

ST. LUKE'S HOSPITAL AT DENVER, COLORADO.—This handsome new structure for the care of the sick was consecrated under the ritual of the Episcopal church, conducted by Bishop Spalding, on Sunday, October 18. The wards are four in number, containing fifty beds, and there are fourteen private beds; there are two beds endowed for charity cases. The present structure will eventually be the administration building, when the planned wards are added. The outlay thus far has been about $80,000 for land and central building.

SOCIETY PROCEEDINGS.

Mississippi Valley Medical Association.

Seventeenth Annual Meeting, held in St. Louis, Missouri, October 14, 15, and 16, 1891.

(*Concluded from page 701.*)

SECOND DAY—AFTERNOON SESSION.

Dr. J. W. Carhart, of Lampasas, Texas, contributed a paper on

THE INFLUENCE OF GRAVEYARDS ON PUBLIC HEALTH,

in which he drew the following conclusions:

1. From whatever standpoint this subject is approached it must be with care and gentleness, since the graveyard, though a constant menace to public health, has a pseudo sacredness fostered by the profoundest sentiments of our natures.

2. The method of the disposal of the dead should be founded on reason and not on custom or sentiment.

3. The interment of the dead in the earth was never enforced by a statute, Jewish or Christian, and was merely incidental to both dispensations.

4. No law, human or divine, requires us to dispose of the dead in a manner prejudicial to the health and comfort of the living.

5. Whilst it may be an open question as to the right of the State to decide as to the manner of the disposal of the dead, except in exceptional cases, it is clearly the province and duty of the State to prevent such disposal as will in any wise jeopardize the interests of the living.

6. From all the facts at our command, we are led to the conclusion that the graveyard should become a thing of the past, and that incineration is the method most in accordance with science, sanitation, æsthetics, reason and religion.

7. We would add, as a corollary to these several conclusions, that since the intelligent, broad-minded physician is the almost exclusive guardian of public health in seeking to prevent the development and spread of disease, it is plainly his duty, when cemeteries are being located, to use his best endeavors to have them so placed as to jeopardize as little as possible the public health; and for its moral effect he should encourage efforts to beautify existing cemeteries; and that he should seek, as fast as possible, without too much violence to the tender sensibilities of the masses, to encourage incineration of the dead, or some other method more in harmony with sanitary science than the common modes now practiced.

Dr. J. T. Jelks, of Hot Springs, Ark., read a paper on *Blenorrhœa*.

Dr. Landon Carter Gray, of New York, followed with a paper on *The Present Aspect of Cerebral Surgery*, in which he epitomized the work of Horsley, Ferrier, Keen, and others.

Dr. John A. Larrabee, of Louisville, Kentucky, read a paper entitled *The Importance of Recognizing a Temporary Rachitic Condition in Infants.*

Dr. F. C. Hoyt, of St. Joseph, Mo., read a paper entitled

PACHYMENINGITIS HÆMORRHAGICA INTERNA, WITH REPORT OF A CASE AND PRESENTATION OF A PATHOLOGICAL SPECIMEN,

and suggested the following deductions, offering them as a practical and rational view of the subject:

1. That the disease known as pachymeningitis hæmorrhagica interna chronica is not a disease of the dura mater primarily, and not necessarily at all. The name is therefore a misnomer, and the simpler term sub-dural hæmatoma should be substituted.

2. That the condition is due primarily to paralysis or loss of the normal vaso-motor tonus, associated with structural changes in the cerebral vessels, particularly those of the pia mater.

3. That hæmorrhage may, and often does, take place in the substance of the dura from the causes stated in this paper, but that its vascular supply and anatomical structure render it improbable that these hæmorrhages play any part in the formation of a sub-dural hæmatoma.

4. That the hæmorrhage occurs from the vessels of the pia mater primarily, forces its way without difficulty through the upper web-like layer formerly called the arachnoid, escaping into the sub-dural space. The extravasated blood becomes organized, new vessels are formed, and these assist in furnishing the recurrent hæmorrhages.

5. That the inflammation of the internal surface of the dura mater is secondary, and due to the irritation of the extravasation, and then is not general, but occurs only in patches where organic union has taken place.

Dr. Seth S. Bishop, of Chicago, read a paper entitled

CAMPHOR-MENTHOL IN CATARRHAL DISEASES.

(See page 639, JOURNAL of Oct. 24).

Dr. F. King, of New York, read a paper in which he advocated the poro-plastic felt jacket in the treatment of spinal troubles.

SECOND DAY—EVENING SESSION.

The Association was called to order at 8 P.M., by the second Vice-President, Dr. S. S. Thorn, of Toledo, Ohio, after which President Hughes delivered his address on

MEDICAL PROGRESS.

(See page 651, JOURNAL of Oct. 31.)

Dr. J. B. Hamilton, of Chicago, followed with an address on

THE DRAINAGE OF CHICAGO,

in which he principally dwelt upon its topography. (See page 639, JOURNAL of Oct. 24.)

Dr. Joseph M. Mathews, of Louisville, Ky., delivered a timely, entertaining and remarkably humorous address on the

LIGHTS AND SHADOWS OF A DOCTOR'S LIFE.

The address was punctuated throughout with great applause, and was a relief to the laity after listening to the profound, scientific, and scholarly addresses of the preceding speakers.

At the close of the session the members repaired to the Lindell Hotel, where a banquet was given with all the manifestations of true St. Louis hospitality. Dr. I. N. Love was toastmaster.

THIRD DAY—MORNING SESSION.

Mr. Chas. Truax, of Chicago, read a paper (by invitation) entitled

ARE CONSERVATIVE AMPUTATIONS ALWAYS IN THE INTEREST OF THE PATIENT?

He said that during the past quarter of a century the development of prosthetical science has advanced with a rapidity unprecedented in the history of the art. The first of the two great causes which stimulated this development may be found in the dreadful carnage and mutilation observed in the late civil war, which left thousands of veterans maimed by the loss of one or more limbs, for whom it was necessary to provide artificial substitutes. Experience and investigation had convinced him that the percentage of favorable cases can be largely increased, provided surgeons will familiarize themselves with the necessary mechanism of ordinary artificial legs, and the relations existing between them and the stumps on which they are to be worn, and select their point of amputation accordingly.

From a statistical point of view he finds that out of 2,135 tibial amputations reported to him as being performed between the years 1885 and 1891, 90.7 per cent. resulted in healthy stumps; 3.1 per cent. of stumps upon which compensative appliances could not be worn. Of these tibial cases, 962 were seen by the surgeons after they were wearing, or had attempted to wear, an artificial limb, 86.9 per cent. of which walked with an easy movement and a comparatively graceful step. Of 658 tarsal and tibio-tarsal amputations reported at the same time, 82.7 per cent. resulted in sound healthy stumps; 8.3 per cent. underwent re-amputation, while 3.2 per cent. died, leaving 14 per cent., including re-amputation, upon which prosthetical apparatus could not be worn.

He recommended surgeons to avoid amputating within three inches of the knee-joint. Do not amputate between the meta-tarsal bones and the junction of the lower and middle thirds of the tibia. At all other points they should save all they could, and they will have done in every case, the best for their patients.

INTESTINAL OBSTRUCTION.

This was the title of a paper read by Dr. Henry H. Mudd, of St. Louis, in which he advised early operation.

Dr. C. H. Dalton, of St. Louis, read a paper entitled:

TEMPERATURE NO GUIDE IN PERITONITIS.

So skeptical had he become on the subject that, in considering the advisability of an operation in abdominal cases, he was no longer guided by the thermometer. He takes the temperature in all cases, but does not let the lack of fever influence him against operation when other symptoms, upon which he has learned to place far more reliance, would move him in the opposite direction. Surgeons found it difficult to convince the average physician that a violent peritonitis may exist without a normal, or even subnormal, temperature, for the teaching by some has heretofore been that sepsis is always accompanied by an elevated temperature.

Several weeks since, he was called in consultation in a case of intestinal obstruction, in which peritonitis was in full blast. He advised operation, and was met with the objection that there could not be much peritonitis with a temperature of 99.5°. He pointed in vain to the patient's anxious countenance, to the great tenderness on pressure, a distended belly, the vomiting, the pulse, as well as the fact that purgatives had been tried without avail. The doctor in attendance insisted upon one more dose of salts. It was given. It did not move the bowels, but did move the patient to that place from which no traveler returns. Time and again he had seen cases of intestinal obstruction with stercoraceous vomiting, rapid pulse, anxious countenance (facies abdominalis), in which the temperature was about normal or even subnormal. In his earlier experience, the lack of fever in abdominal cases puzzled him very much, and led him astray in a number of instances. While it is well to remember that fever, when present in belly cases, indicates peritonitis, its absence does not warrant us in saying that peritonitis is not present, and should not blind us as to the actual condition.

SARCOMA OF THE DORSO-SCAPULAR REGION.

Dr. Geo. N. Lowe, of Randall, Kas., read a paper on this subject. He reported a case upon which he had operated, the patient, a man aged 18 years, with no history of tuberculosis, carcinoma or sarcoma, recovering. The object of this paper was to show:

1. The necessity of an early operation in all cases of a malignant growth.

2. That some species of sarcoma are more rapid and destructive in their course than carcinoma, especially the spindle- and giant-celled variety.

3. The necessity of having a law to enforce patients so afflicted, as soon as a correct diagnosis can be made, to an early operation, thereby preventing great suffering and prolonging life.

4. That a sarcoma which has grown to an enormous extent, infiltrating the surrounding tissue at any considerable extent from the main growth with cell proliferation, an operation is almost useless as regards a permanent cure.

Dr. W. H. Link, of Petersburg, Ind., read a paper on

APPENDICITIS,

and offered the following conclusions:

In the commencement of the attack, give salines often and liberally until the gut is completely emptied. Advise perfect rest in bed. Forbid any but liquid nourishment. If pain is severe, apply counter-irritation and dry heat until salines act. If patient improves, wait. If pulse grows worse, if temperature rises, if pain increases, if tumefaction becomes larger, if tenderness becomes more marked, operate. At no time give morphia, but consider an increase of pain sufficient to demand relief by opium an imperative, unequivocal and emphatic indication for surgical interference.

RHEUMATISM AND GOUT AS FACTORS IN THE CAUSATION OF ECZEMA, AND THE MANAGEMENT OF THOSE CONDITIONS,

was the title of a paper by Dr. A. H. Ohmann-Dumesnil, of St. Louis. He did not purpose speaking of the etiology of eczema. The only phase which he desired to take under consideration was, in how far rheumatism and gout were concerned in the causation and prolongation of eczema, and what was the proper management of those conditions in order to derive the greatest benefit, so far as the cutaneous involvement is concerned. Naturally this implied that he was about to sustain the position that the conditions named were etiological factors, and such was probably the case. If we took the trouble to examine critically the history, condition, treatment and results in patients, a mass of evidence would be found which, if it did not constitute absolute proof, bore so much weight with it that the probabilities would all tend to confirm and strengthen the position that rheumatism and gout prolong, intensify, and even cause eczema. He had found it to be quite frequent, also, to note that an acid condition was present in eczematous patients. It occurred too frequently to be regarded as a coincidence. Moreover, a correction of this acid condition finds its good effect reflected in the ease with which the cutaneous trouble gave away to proper medication. Whether such cases were inclined to rheumatism or gout it was difficult to say; but that an excess of acid was found in all of these conditions there was no opportunity of denying. For, if eczematous pa-

tients were interrogated in this respect, a large proportion of them would speak of acid eructations, pyrosis, and other evidences of the condition.

In regard to the management of gout and rheumatism volumes had been written, and equally good results had been claimed for different methods of treatment. The most powerful alkali to affect the solubility of uric acid was, beyond all doubt, lithia. The urates of that alkali are the most soluble known, and on that account, a better elimination can be secured. Potash salts run next in value in regard to their solvent value upon uric acid. The soda salts, while exercising good influence, are not as valuable in this respect as either of the others, and the magnesia salts are the least effective.

A question of no mean importance was that concerning the solubility of the various alkaline salts. Chemical investigation has clearly demonstrated that the bicarbonates of lithia, potash and soda are not only the most soluble, but the most easily assimilated by the animal organism. To prevent any decomposition, it is only necessary to dissolve them in carbonated water, which not only keeps them in a soluble state, but also adds to their palatability.

Dr. Enno Sander, of St. Louis, has prepared his well-known lithia potash water, which fills all the indications required, and which acts not only as an anti-rheumatic, anti-lithic, and anti-gouty mixture, but constitutes a grateful table water as well. It not only acts as a curative remedy, but, what is still of greater importance, it is a reliable prophylactic. Its composition is as follows:

Lithium bicarbonate, gr. xiij.
Magnesium bicarbonate, gr. x.
Potassium bicarbonate, gr. xvj.
Sodium chloride, gr. x.
Carbonated water, gr. xvj. ℥.

This quantity, one pint, should be taken daily, or the amount increased, it being necessary.

Conditions occasionally arise in which it will be found that a mixture of salicylate of soda and bicarbonate of soda will effect the happiest results in rheumatism, and occasionally in gout. Given in carbonated water, the administration is made pleasant, and the mixture has an effect upon the patient which is refreshing at the time it is taken, and which effects beneficial results in a very short time. When eczema is present, the proper local remedies should be made, and it is astonishing how their action will be accentuated by the internal use of alkalies as indicated above.

Dr. C. A. L. Reed, of Cincinnati, Ohio, read a paper entitled

OBSERVATIONS ON THE MANAGEMENT OF UTERINE TUMORS,

in which he said that there are certain solid tumors of the uterus which require no operation. They are, for the most part, comparatively small neoplasms, either interstitial or sub-serous; they are indolent in growth, and they do not produce alarming symptoms from either pressure or hæmorrhage. There are certain other myomata of the uterus that are uniformly recognized as demanding operation. They are, for the most part, rapidly growing tumors in young subjects — removable fibro-cystic tumors, soft œdematous tumors, large bleeding fibroids, and those growths which give rise to ascitic accumulations.

Dr. Reed offered the following conclusions:

1. That all persistently hæmorrhagic uterine myomata, of whatever variety, should be advised to early operation.

2. In young subjects, with multi-nodular tumors, giving rise to alarming hæmorrhage, the appendages should be removed when practicable as an alterative for extirpation. But the latter operation should be done whenever the character of the growth will permit of its removal by dangers less than those which would be involved by its continuous existence.

3. To those tumors already recognized as demanding operation should be added those of uterine development that are liable to dangerous constriction by the uterine walls, and in which their destruction by this means might induce sepsis.

4. All cases of subserous growths, indolent yet progressive in character, in which the tumor has become a menace to neighboring organs, should, whether hæmorrhagic or not, be advised to exploratory incision with reference (1) to removal of the appendages, or (2) of the neoplastic organ.

5. All growing tumors, growing in women beyond the menopause, should be removed, if possible, by vaginal total extirpation, or, if that be impracticable, by abdominal section.

6. All distinctly operable cases demanding interference should be advised to submit to operation at the earliest practicable moment.

THE ETIOLOGY AND TREATMENT OF GRANULAR CONJUNCTIVITIS.

This was the title of a paper contributed by Dr. Francis Dowling, of Cincinnati, Ohio.

Dr. Dowling stated that the great rôle which the disease plays in the causation of blindness renders its successful treatment one of the great desiderata of our day. Its great hot-beds are in some of the countries of the Orient, owing to the prevalence of whirlwinds of sand and the intense heat and glare of the sun. The malady attacks by preference the poorer classes; the rich and well fed enjoy a comparative immunity from the disease. It is most frequent in persons between the ages of 15 and 45, and children under 6 rarely have the disease. It does not become epidemic at a height of over 250 meters above the sea level, and it loses its contagious character at this height.

Treatment.—Personally, he had had more success by touching the lids with the mitigated stick of ergent. nit., and then immediately washing it off, than with any other remedy. He applied the treatment usually twice a week, and on the intervening days he rubs in an ointment composed of yellow oxide of mercury and atropia. He also corrects any trouble of refraction that may exist, for unless this is attended to, the disease will persist under all kinds of treatment.

The disease is now treated in Paris, France, by completely everting the lid, and scarifying the granular tissue, then rubbing in with a stiff brush a $\frac{1}{3000}$ solution of bichloride of mercury. Cases are cured in this way in four to six weeks, that formerly took several years to cure with the old treatment. In outbreaks of the disease in orphan asylums, barracks, etc., the afflicted should be completly isolated from the healthy inmates, and their apartments should be kept absolutely clean, and fumigated with burning sulphur at least once a week.

Dr. John Bartlett, of Chicago, presented a paper in the form of a

REVIEW OF AN OBSTETRICAL WORK,

published in Paris in 1682 by Paul Portal. He said the older members of the profession had for years rested in the opinion that it was Paul Portal to whom obstetrical science was indebted for the discovery of the fact, that in placenta prævia the after-burden was attached to the womb, and had not simply fallen down over it, as was taught by writers before his day.

Dr. G. Frank Lydston, of Chicago, followed with a paper entitled

OBSERVATIONS ON URETHRAL STRICTURE,

in which there were many striking points. The author opposed the general impression prevalent among surgeons that the long duration rather than the severity of a virulent urethritis determined the development of organic stricture. He claimed that this view has been due to fallacious reasoning from the standard of *post hoc ergo propter hoc.* It is not the long continued urethritis that produces a deposition of the adventitious tissue constituting organic stricture. On the contrary, a chronic localized urethritis exists because the stricture or the foundation of it has been determined at some portion of the urethra by the primary virulent inflammation. He claimed that the liability to the formation of organic stricture is directly proportionate to the severity of the primary inflammation. The localization of stricture, the author claimed, was not due, as Sir Henry Thompson and his school assert, to an obstruction to drainage and the retention of the products of virulent inflammation, but to deficient elasticity or distensibility of the canal at certain points. The conditions determining stricture he compared to those prevailing in a rubber tube about which cords are tied in such a manner that while some actually constrict the tube, others simply prevent its distension. If fluid be pumped through a rubber tube thus constricted or restricted, as the case may be, at a certain degree hydrostatic pressure, and at certain intervals, friction, occurs at these points and a continual unrest. The epithelium is rapidly removed, its vitality being impaired by the virulent poison of urethritis. By and by rapid removal and reformation of epithelium becomes a cell habit, the resulting formation of cells being of a low grade of inherent vitality. In addition to this change upon the surface of the mucous membrane there is deposited young connective tissue cells in and about the affected point as an evidence of an attempt on the part of Nature to secure rest and prevent strain. These cells the author likened to sandbags thrown up to strengthen or prevent a breach, as the case may be, in a fortification.

The doctor called attention to a number of interesting reflex phenomena incidental to stricture of the urethra. He also went exhaustively into the various toxæmia conditions incidental to renal disturbance secondary to stricture, and to that peculiar form of toxæmic incident to the absorption of ptomaines from the site of the urethral lesion. He went into the subject of electrolysis and absolutely denied the possibility within the limits of safety of using it in the treatment of organic stricture. Galvanism, he claimed, instead of electrolysis, is what is really accomplished. He condemned the routine and extreme claims of Newman, and also the other extreme as represented by Dr. Keyes, who asserts that galvanism, *i. e.*, so-called electrolysis, has absolutely no effect. Dr. Lydston claimed that the effect of galvanism upon organic stricture of the urethra was the same in its physiological character as upon healthy or morbid tissue in any other situation. The author described what he terms *plus* conditions of organic stricture. Thus we have engrafted upon the organic foundation varying degrees of hyperæmia, spasm, and œdema, one or all. These *plus* conditions, the author claimed, galvanism, properly applied, would subtract from the organic condition in certain cases, and in so far as this effect was marked the stricture would be benefited. The author denied the possibility of the galvanic current producing absorption of fibro-connective tissue after it has arrived at the acme of differentiation by any current which will not destroy the mucous membrane itself; in other words, we cannot control the galvanic current so that it will exert a selective action and remove the abnormal tissue while sparing the normal tissue.

The following officers were elected:

President—Dr. C. A. L. Reed, Cincinnati, Ohio.
First Vice-President—Dr. C. S. Bond, Richmond, Ind.
Second Vice-President—Dr. Thomas Hunt Stucky, Louisville, Ky.
Secretary—Dr. E. S. McKee, Cincinnati, Ohio.
Chairman of the Committee of Arrangements—Dr. Joseph Ransohoff, Cincinnati, Ohio.
Place of next meeting, Cincinnati, October, 1892.

DOMESTIC CORRESPONDENCE.

LETTER FROM NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

In the possession of some descendants of John Murray, who was treasurer of the New York Hospital, nearly a hundred years ago, there are some very interesting reports of that venerable institution in its early days which your correspondent has lately had the opportunity of examining. These reports, or rather circulars of information, which are naturally yellow with age, but in an excellent condition of preservation, are printed on a single sheet of four quarto pages. The first of them commences as follows:

NO. I. CHARITY EXTENDED TO ALL. STATE OF THE NEW YORK HOSPITAL FOR THE YEAR 1797.

Below this is a wood-cut of the hospital building on lower Broadway, the front of which was about 125 feet in length. Then comes a list of the officers and governors, and this is followed by the names of the medical staff, the descendents of some of whom are still prominent in the profession of this city. The physicians were John R. B. Rodgers, Elihu H. Smith, Samuel L. Mitchell and David Hosack, and the surgeons, Wright Post, Richard S. Kissam, Samuel Borrowe, Richard Bayley and Valentine Seaman. The house-surgeon was Dr. Samuel Barnum, and the steward rejoiced in the name of William Hogsflesh. The names of the apothecary and matron are also appended.

The circular goes on to state that this institution was undertaken by private subscription of the inhabitants of New York, in the year 1770, and in consequence of a petition to the then governor by Peter Middleton, John Jones and Samuel Bard, three reputable physicians of this city, was incorporated by charter on the 13th of the sixth month (June), 1771, under the style and title of "The Society of the Hospital in the city of New York, in America." A few extracts from the early history of the hospital as given in this report may prove of interest:

"Animated by the Principle of christianity, the Society uniformly disclaimed any influence of contracted attachment to any national, civil or religious Distinctions; but that all Persons should be entitled to the Benefits of the Institution, whose Maladies and extreme Indigence cast them on the Charity of others for Relief. By the Influence of Doctor Fothergill and Sir William Duncan it was aided by the Contributions of many Inhabitants of London and other Parts of Great Britain; the Legislature also aided the Institution by an Allowance of Eight Hundred Pounds annually, for Twenty Years, and a Plan of a Building, suggested by Dr. John Jones, was agreed upon in 1773, but unfortunately when the House was almost completed, it accidentally took fire on the 28th of the second month (February), 1775, and was nearly destroyed. By this Calamity the Society sustained a loss of Seven Thousand Pounds, and their Intention would perhaps have been suspended, had not the Legislature almost immediately voted them the sum of Four Thousand Pounds to assist in repairing their loss and rebuilding the House; but the War with Great Britain, which took place in the same year, prevented its completion; and during the War the House was occupied by Barracks, and much injured by the British Garrison. Owing to a Variety of Obstacles, and the Derangement in the Circumstances of our Citizens during the War, it was not until the first month (January), 1791, that the House was in proper order to receive Patients; at which Time a Number were received. The Annuity granted previous to the War by the Provincial Legislature having ceased with the Commencement of Hostilities, except an Allowance for Four Years of that Annuity, which was paid the Society out of the Excise since the Peace, the Legislature in 1792 granted Two Thousand Pounds a Year, for Five Years, as a Consideration of Arrears due, for its better Support. In the Second Month (February), 1793, the Act for allowing Two Thousand Pounds was repealed, and the Sum of Four Thousand Pounds was granted for Five Years annually, and in the second month (February), 1796, this was increased by adding the further Sum of One Thousand Pounds per annum, for Four Years. By an Act of the Legislature, passed 1st of the fourth month (April), 1796, entitled, 'An Act more effectually to regulate the Port of New York,' the Harbour-Master is directed to pay to the Hospital certain fines therein mentioned."

"Notwithstanding all these generous allowances," the report goes on to say, "the Governors have not been able to complete the necessary Arrangements, owing to certain alterations, repairs and improvements that had to be made about the buildings and grounds." We read next that persons laboring under incurable decrepitude, or long continued ailments of any kind, were considered as fitter objects for an almshouse than for this hospital, "which is properly an Infirmary, for the Reception of such Persons as require Ist, Medical Treatment. IId. Chirurgical Management. IIId, Maniacs, and IVth. It is in Contemplation to fit up a Laying-in Ward, for the Reception and Accommodation of poor and distressed pregnant Women, so soon as Circumstances shall permit."

That the value of such an institution as a school for clinical instruction, and the necessity for a good medical library, was appreciated at this early date, is shown by the following extract: "The Students who attend the Lectures of the Medical Professors of Columbia College likewise attend regularly the Practise of the Hospital, which has thus become a valuable Addition to the excellent Medical Establishment of that Seminary; the Benefit derived from Attendance on the Cases of the Sick is

very much promoted by the Clinical Lectures delivered on the more select Objects of Practise by Dr. Rodgers, whom the Medical Faculty of the College have appointed to that Employ. And that the Interest of Letters and Science might be as much attended to as possible, the Governors have voted the sum of Two Hundred Pounds as the Beginning of a Library, to be composed of Books on Medical and Chirurgical Subjects, and on such Philosophical and Œconomical Matters, as have a Connection therewith, so that the Governors themselves, as well as the Physicians and Surgeons of the Hospital, may have the best of information on all needful Occasions, and the means of acquiring Knowledge be greatly facilitated to Students of Physic and Surgery." From this it will also be seen that the recent consolidation of the College of Physicians and Surgeons with Columbia College, is only a return to the condition of affairs existing in the good old times a hundred years ago. It is interesting also to read the record of the actual starting of the great New York Hospital Library, which has since become so famous all over the medical world: "By the Care and Pains of Doctors Mitchell and Smith, the Purchasing Committee, a very select and valuable Collection of Books have already been made; and, it is earnestly to be hoped, the Funds of the Corporation will be found commensurate to the annual Appropriation of a Sum of Money for this valuable Purpose."

On the third page of the report is given an abstract of the financial accounts of the hospital for the current year, and on the fourth page a summary of the medical and surgical cases. During the year 1797, the total number of patients treated was 578, of whom 240 were natives of America and the rest of foreign birth. The largest number of cases of any one disease is set down to syphilis, viz.: 127. Third on the list as regards numbers comes pneumonia. Of this disease there were 59 cases, of which 24 were cured, 2 were discharged by desire, 13 died, and 20 still remained under treatment at the end of the year. Only six cases of phthisis were noted. Of course, the name typhoid does not appear on the list, but we find eight cases of typhus, of which two died. The diagnosis of "tumor," without designation as to the seat or character of the growth, is given in three cases. There were two cases of cancer, of which one is marked cured and one relieved.

From the report for 1800 we find that the number of patients treated had almost doubled during the three years, the total during that year being 1103. Of these, no less than 306 had syphilis. This year there were but 20 cases of pneumonia. In addition to 10 cases of *fever and ague*, 16 cases of *intermittent fever*, and 2 cases of *remittent fever*, we find 43 cases set down simply as "fever," without any indication of the nature of the fever. As the name typhus does not appear on this list, and as 12 of the patients died, it seems probable that these were for the most part cases of typhoid. On the list of diseases appear *anasarca*, 1 case; *ascites*, 2 cases; and *dropsy*, 10 cases. This year there were 15 cases of small-pox and 4 cases of measles. P.B.P.

NECROLOGY.

DR. CHRISTOPHER JOHNSTON, of Baltimore, died October 11, in his 70th year. His family had been Baltimorean since 1766, and he was the third of his name. He was an alumnus of the University of Maryland in the year 1844. He was chosen to a chair in his *alma mater* in 1864, and built up a fine reputation as an artistic and instructive teacher, having great facility with pencil and brush. In 1870 he succeeded the late Nathan R. Smith to the much-coveted chair of surgery. For a decade at least, he was regarded as among the first in this branch; in his studies he showed a strong preference to microscopy and pathology. He was a frequent contributor to the Medico-Chirurgical Faculty of Maryland, being its president in 1876. He was a member of this Association from 1855.

DR. DAVID H. STORER, of Boston, died September 10, in his 88th year. He was one of the senior ex-presidents of the American Medical Association, having held the chair at the Baltimore convention in 1866. Dr. Storer was eminent as a scientist as well as a physician and medical teacher. A fuller biographical minute is in course of preparation and may be expected in an early issue.

DR. THOMAS T. PRATT, who died at the University Hospital, London, August 29, was an Alabaman by birth, who had resided abroad almost continuously since the close of the civil war. He was a son-in-law of the late Professor Marion Sims, and built up a large practice in Paris. During the last fifteen years he had resided in London. He served with distinction in the Franco-Prussian war, and obtained crosses or decorations from both nations after the war was over.

MISCELLANY.

"The Lancet" on American versus European Medical Education.

We have more than once directed the attention of our readers to the state of medical education and of the medical colleges in the United States, and to the regulations of the schools and licensing boards of the profession. It requires but a slight acquaintance with the members of the profession in America who visit us, and with American literature and journalism, to see that there must be many sources of good medical education in the States. We are apt perhaps to be somewhat prejudiced by the newspaper accounts which reach us of fraudulent colleges and bogus degrees, and the facilities for their existence and prosperity in the very constitution and law of the States are unfortunately too great. If we refer to them, it is in no unfriendly spirit to our brethren in America. On the contrary, our exposure of them is supplementary to their own efforts in that direction. There is in the States, as we have frequently pointed out, a wide and earnest attempt to expose and remove the defects of their system and to lift the whole standard of medical education to a European level.

We have before us a very interesting paper by Samuel O. L. Potter, A.M., M.D. (Jeff.), Professor of the Princi-

ples and Practice of Medicine in the Cooper College of San Francisco, read before the forty-first annual meeting of the American Medical Association. The paper, which is headed American *versus* European Medical Education, after comparing American medical college work with that of European medical schools, seems to be an honest endeavor to demonstrate that the result is by no means so unfavorable to the American schools as is generally assumed. Dr. Potter is very indignant at what he calls the feeling of contempt for American medical education and persons, which, he says, so "pervades the European that, polite as he is, he is never able wholly to disguise it." He is especially angry with the action of the authorities of the medical school at Berlin in denying to American graduates studying there the right to the letters M.D. after their names. And he suggests as punishment that American students should withdraw from Germany, and for post-graduate study visit London or Edinburgh, where he thinks they will benefit more directly than in Berlin or Vienna. But he goes further and suggests retaliatory legislation refusing recognition to foreign graduates until the American diplomas are recognized.

We sympathize with Dr. Potter and all other earnest colleagues of his who are doing their best to put medical education on a proper footing throughout the States, and who are conscious of the disrespect which, meant for the worst American diplomas, is very apt to affect the best of them. But we venture to suggest that he will attain his object sooner and better represent the just dignity of medical teaching authorities in the United States by a little fuller admission of the difference between the process of medical education in the States and in European countries, and a little longer perseverance in the efforts which he and the representatives of other American schools are making to lessen that difference, which is practically admitted by himself. It is not only in details, but in the absence of a central controlling power in the States. In European countries the State acts from a center and as a whole. In England, in addition to the central legislature unifying medical laws for England, Ireland, and Scotland, there is the General Medical Council, controlling and supervising all the medical examining boards. Dr. Potter speaks kindly of England, and naturally looks to her for recognition. We cordially reciprocate the sentiment that the great English-speaking nations should in this, as in all matters, honor and respect each other. But he will take it well from us when we confess that he has not established to our satisfaction that the American is equal to the European curriculum.

In respect of the *time* required for medical education in England and the States, respectively, we can not follow him when he tells us that, inasmuch as the conjoint medical colleges of England allow a *year and a half* of the four years' time they require to be spent in receiving instruction as a pupil of a legally qualified practitioner, thus leaving only two years and a half for school and hospital work, they do not so favorably differ from the American colleges, which always require a year's pupilage previously to their two or three years' college work. We do not find such a permission in our reading of the regulations of the English colleges. They specifically require "that not less than three winter and two summer sessions shall have been passed at one or more of the medical schools recognized by the two colleges." We know as a matter of fact that men can only enter the profession after a preliminary examination, and that from whatever board, university or college students in England take their qualification, they have to work four years for it in consecutive sessions, and to pass very trying examinations before they succeed. Moreover, we would remind Dr. Potter that the General Medical Council has this year decided that the term of medical education must extend over *five* years, and has not sanctioned the use of more than six months of this time in the way of pupilage. We have said that the exposure of the defects and faults of American medical schools and boards is the work of American physicians and surgeons who are jealous of the honor of their profession, and who, in many instances, as Dr. Potter says of the president and founder of the Cooper Medical College, of San Francisco, have made great sacrifices for it. He avers "that each member of his college gives ten hours a week to college work, exclusive of the hours spent in preparation, and not one draws a cent from its treasury." This is very noble, but it has no bearing on those scores of colleges which swarm in the States, whose diplomas are given after two or three years' study, and with little or no preliminary education. If any one doubts the evil, let him invest in one of the most instructive medical publications in the world, The Report on Medical Education of the Illinois Board of Health — one of the States which is blessed with a legislature that has given, as all States should give, to a medical board the power of judging diplomas, and refusing recognition to unworthy ones. This report abounds in information as to the conditions of medical education in the United States and Canada, and its able compiler, Dr. Rauch, can have no interest in misrepresenting the facts. He points out that in the seven years reported on there has been very great improvement. There has been a steady rise in the number of colleges requiring proofs of preliminary education, and of colleges requiring a more extended period of medical education. There is a yearly decrease in the percentage of graduation to matriculation in the United States. Another feature of the American case is the existence of examining and licensing bodies which do not give instruction. These are all marks of an improvement which is bound to go on as public and professional opinion on the subject is strengthened. The effect of the Illinois State Board raising the minimum requirement for diplomas to be recognized in that important State was to diminish considerably the number of students and of graduates. It is inevitable that when men can get diplomas on easy terms elsewhere, they will not repair willingly to those boards which exact higher terms. The great hindrances to progress in the States are the inequality of requirement and the number of schools and degree-granting bodies without central law or control. There are still 135 medical colleges of all kinds in the United States. Each State has its own medical bodies, and the powers of these vary in each State. In some, as in Illinois, there is an act of the State empowering a medical board to grant medical qualifications. In others there is no law on the subject. In a great many States diplomas are merely registered in a county clerk's office. In others bodies seem to form and to dissolve again, or to merge into other bodies with functions of a teaching or diploma-granting kind in a most remarkable way. One has only to study the history of the schools, even of a leading State, to see how much too easy it is for schools to be formed. In the State of Pennsylvania, for example, where the medical faculty dates back to Franklin's time, and was chartered mainly by his influence, sixteen schools of various kinds could until lately be counted. Nine of these, fortunately, are extinct, some having been guilty of fraud of the worst kind. These are the evils incidental to a system of government by separate States. We rejoice at the efforts made to mitigate and remove them, and wish such endeavors all success. But it is obvious that such a loose system, and one so open to abuse, exists nowhere in Europe.—*London Lancet*, Oct. 3, 1891.

THE SOUTHERN SURGICAL AND GYNECOLOGICAL ASSOCIATION.—Programme of the Fourth Annual Meeting, to be held in the hall of the House of Delegates, Richmond, Va., on November 10, 11 and 12, 1891. Members of the medical profession are cordially invited to attend.

First day, Tuesday, November 10. Morning session, 9.30 o'clock. Address of welcome and response.

1. Albuminuria: Its Relation to Surgical Operations, by J. W. Long, M.D., Randleman, N. C.
2. On Systemic Infection from Gonorrhœa, by Bedford Brown, M.D., Alexandria, Va.
3. The Neuroses of the Genito-Urinary System in the Male, by G. Frank Lydston, M.D., Chicago, Ill.
4. The Principle of Drainage as Applied to the Surgery of the Deep Uretha, by F. W. McRae, M.D., Atlanta, Ga.
5. A Report of Some Additional Cases of External Perineal Urethrotomy Without a Guide, by J. Edwin Michael, M.D., Baltimore, Md.
6. The Proper Method of Performing Circumcision, by W. Frank Glenn, M.D., Nashville, Tenn.
7. Reduction of Dislocations by Manipulation, by W. F. Westmoreland, M.D., Atlanta, Ga.

Adjournment at 1 o'clock P.M.

Afternoon session at 2.30 o'clock.

8. Drainage in Endometritis and Salpingitis, by W. M. Polk, M.D., New York, N. Y.
9. Complications in Pelvic Surgery, and How to Deal with Them, by Joseph Price, M.D., Philadelphia.
10. Laparotomies Performed During the Past Year, by Thomas Opie, M.D., Baltimore, Md.
11. A Case of Pelvic Abscess, by John Brownrigg, M.D., Columbus, Miss.
12. Ovarian Cysts, with the Report of a Case of Ovariotomy in a Young Girl, by C. Kollock, M.D., Cheraw, S. C.
13. Abdominal Section in a Case of Cyst of the Mesentery, with Remarks, by J. A. Goggans, M.D., Alexander City, Ala.
14. A New Method of Diagnosis in Disease of the Sigmoid Flexure, by Joseph M. Mathews, M.D., Louisville, Ky.

Second day, Wednesday, November 11. Morning session, 9:30 o'clock.

15. A Medico-Legal Aspect to Pelvic Inflammation, by W. W. Potter, M.D., Buffalo, N. Y.
16. Medico-Legal Aspect of Intestinal Surgery, by J. D. S. Davis, M.D., Birmingham, Ala.
17. Peritonitis from a Surgical Standpoint, by A. V. L. Brokaw, M.D., St. Louis, Mo.
18. Hand Disinfection, by Howard A. Kelly, M.D., Baltimore, Md.
19. Cataphoric Treatment of Uterine Fibroids by Iodide and Other Agents, by Hunter McGuire, M.D., Richmond, Va.
20. The Pedicle in Hysterectomy; How Formed; Its Subsequent Behavior; Its Final Condition, by I. S. Stone, M.D., Washington, D. C.
21. Clinical Importance of Skin Dimpling in Carcinoma of the Female Mamma, by L. McLane Tiffany, M.D., Baltimore, Md.
22. Early Diagnosis of Carcinoma by the Microscope, by H. Berlin, M.D., Chattanooga, Tenn.

Afternoon Session at 2:30 o'clock.

23. The President's Annual Address.
24. On Injuries to the Pelvic Floor and the Method of Repairing the Same, by Thomas Addis Emmet, M.D., New York.
25. The Part the Shoulders Play in Producing Laceration of the Perineum, with Suggestions for its Prevention, by W. D. Haggard, M.D., Nashville, Tenn.
26. The Surgical Treatment of Anterior Displacement of the Uterus, by C. A. L. Reed, M.D., Cincinnati, O.
27. The Growth of Fibroid Tumors of the Uterus after the Menopause, by Joseph Taber Johnson, M.D., Washington, D. C.
28. Thinness of Uterine Walls Simulating Extra-Uterine Pregnancy, by Geo. J. Engelmann, M.D., St. Louis, Mo.

Third Day, Thursday, November 12. Morning Session, 9:30 o'clock.

29. Tracheotomy for Foreign Bodies, with Cases, by W. O. Roberts, M.D., Louisville, Ky.
30. A Method for Removing Impacted Gallstones by means of Solvents, by Robert T. Morris, M.D., New York.
31. Cholecystotomy—Report of Case—Fifty-two Gallstones and 10 Ounces of Pus Removed—Recovery, by W. B. Rodgers, M.D., Memphis, Tenn.
32. Treatment of Gallstones, with Report of Cases, by W. E. B. Davis, M.D., Birmingham, Ala.
33. Nephrectomy, with Report of Cases, by Edwin Ricketts, M.D., Cincinnati, O.
34. The Present Status of Cerebral Surgery, by Landon Carter Gray, M.D., New York.
35. The Treatment of Injuries of the Skull, by W. H. Hudson, M.D., LaFayette, Ala.
36. Some of the Complications of Psoas Abscess, by J. McFadden Gaston, M.D., Atlanta, Ga.

Afternoon Session, 2:30 o'clock.

37. Venomous Serpents of the United States, and the Treatment of Wounds Inflicted by them, by Paul B. Barringer, M.D., University of Virginia.
38. The Female Urethra, by K. P. Moore, M.D., Macon, Ga.
39. Blenorrhœa in Women, by J. T. Jelks, M.D., Hot Springs, Ark.
40. Hæmorrhage *versus* Shock, by W. L. Robinson, M.D., Danville, Va.
41. Imperforation of the Rectum, by Geo. Ben. Johnston, M.D., Richmond, Va.
42. Senile Gangrene, by Frank Prince, M.D., Bessemer, Ala.
43. A Case of Induced Abortion for Relief of Nausea and Vomiting, with Remarks, by Christopher Johnston, M.D., Richmond, Va.

Railroads: Those who attend the meeting must obtain from the ticket agent at the point of starting a certificate that they have paid full fare to Richmond. These certificates will be signed by the Secretary of the Association at Richmond, and upon his certificate a return ticket will be issued at one cent per mile.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from October 24, 1891, to October 31, 1891.

Capt. Charles Richard, Asst. Surgeon U. S. A., is relieved from duty at Ft. Logan, Col., and will report in person to the commandant of the Military Prison, Ft. Leavenworth, Kan., for duty.

Capt. Louis M. Maus, Asst. Surgeon U. S. A., relieved from duty at Whipple Bks., Ariz., and ordered to Ft. Apache, Ariz., for duty.

Capt. Victor C. Biart, Asst. Surgeon U. S. A., having been found incapacitated for active service on account of disability incident to the service, is, by direction of the President, retired from active service, to date October 21, 1891.

First Lieut. Robert R. Ball, Asst. Surgeon U. S. A., granted leave of absence for one month, with permission to apply for an extension of one month.

Official List of Changes in the Medical Corps of the U. S. Navy, for the Week Ending October 31, 1891.

Surgeon Henry P. Harvey, ordered to receiving ship "St. Louis."

Surgeon James M. Flint, detached from Smithsonian Institution, and to the U. S. S. "Miantonomah."

Surgeon T. C. Heyl, detached from receiving ship "St. Louis," and wait orders.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Two Weeks Ending October 24, 1891.

Surgeon George Purviance, upon completion of duties as chairman of examining board, to inspect Marine-Hospitals at St. Louis, Mo., Cairo, Ill., and Cincinnati, O. October 16, 1891.

Surgeon John Godfrey, to represent the Service at the meeting of the American Public Health Association. October 14, 1891. To inspect Marine-Hospital at Louisville, Ky. October 14, 1891.

P. A. Surgeon H. R. Carter, granted leave of absence for thirty days. October 17, 1891.

P. A. Surgeon W. J. Pettus, orders to Norfolk, Va., revoked; to proceed to Cape Charles Quarantine for temporary duty. October 14, 1891.

P. A. Surgeon J. J. Kinyoun, to represent the Service at the meeting of the American Public Health Association. October 17, 1891.

P. A. Surgeon T. B. Perry, to proceed to Norfolk, Va., for temporary duty. October 14, 1891.

Asst. Surgeon G. M. Guiteras, to proceed to Gulf Quarantine for duty. October 20, 1891.

Asst. Surgeon M. J. Rosenau, granted leave of absence for thirty days. October 24, 1891.